



Paulson-Cheek Mechanical

6145 Northbelt Parkway
Suite F
Norcross, GA 30071
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Northside Facial Cosmetic Surgery

Alpharetta, GA

HVAC Submittal

April 15, 2015

General Contractor:	D. C. Ecker Construction, Inc.
Mechanical Engineer:	AHA Consulting Engineers
Mechanical Contractor:	Paulson-Cheek Mechanical, Inc.

Section 1	Trane Split Systems
Section 2	Aaon Split Systems
Section 3	Humidifiers
Section 4	Grilles, Registers, & Diffusers
Section 5	Flexible Ductwork
Section 6	Spin-In Dampers, Saddle Fittings, & Line Dampers
Section 7	Fire Dampers
Section 8	Motor Operated Dampers
Section 9	Wall Louvers
Section 10	Exhaust Fans
Section 11	Unit & Wall Heaters



HVAC Submittal Cover Sheet

SECTION: 1

PRODUCT: Trane Split Systems

Paulson-Cheek Mechanical, Inc.
6145 Norhtbelt Parkway, Suite F
Norcross, GA 30071

PHONE: 770-729-0076
FAX: 770-729-1076

PROJECT: **Northside Facial Cosmetic Surgery**

LOCATION: **Alpharetta, GA**

Paulson-Cheek Mechanical, Inc.

ARCHITECT'S/ENGINEER'S STAMP

Paulson-Cheek Mechanical, Inc.

DATE RECEIVED:	03/25/15
MANUFACTURER:	Trane
SUPPLIER:	Trane
SUBMITTED DATE:	03/25/15

☒ NO ERRORS DETECTED

☐ CORRECT EXCEPTIONS NOTED

THIS APPROVAL OF SHOP DRAWINGS DOES
NOT RELIEVE THE SUBCONTRACTOR OR VENDOR
FROM THE REQUIREMENTS OF THE CONTRACT
DOCUMENTS.

CHECKED BY:	Mark Walden
DATE CHECKED:	03/25/15



Submittal

Prepared For:

Paulson Cheek Mechanical
Attn: Mark Walden
6145 Northbelt Parkway
Norcross, GA 30071

Date: April 13, 2015

Sold To:

Paulson Cheek Mechanical

Job Name:

Northside Facial Cosmetic Surgery Alpharetta GA

Trane U.S. Inc. is pleased to provide the enclosed submittal for your review and approval.

Product Summary

Qty	Product
7	Split System Air Conditioning Units (Small)

Split System Notes:

1. **Disconnect switches, auxiliary drain pans, fire/smoke devices, thermostats, external isolation, refrigerant line sets and specialties, spare filters and belts, start up and first year labor warranty are not included by Trane**
2. **(Fid)=provided by Trane, field installed by others**

Sincerely,

Becky Warner Sanborn, LEED AP
Account Manager

Trane U.S. Inc. - Ingersoll Rand
Office: 678-775-4202 Cell: 404-226-6954
Email: becky.sanborn@trane.com
www.trane.com

The attached information describes the equipment we propose to furnish for this project, and is submitted for your approval.

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 Split System Air Conditioning Units (Small) 23

Tag Data - Split System Air Conditioning Units (Small) (Qty: 7)

Item	Tag(s)	Qty	Description	Model Number
A1	FCU/CU-1-1, FCU/CU-1-2, FCU/CU-2-1	3	4 Ton Split A/C	4TTR4048L1000-GAM5B0C48M-
A2	FCU/CU-2-2, FCU/CU-2-3	2	3 Ton Split A/C	4TTR4036L1000-GAM5B0C42M-
A3	FCU/CU-2-4, FCU/CU-2-5	2	2 Ton Split A/C	4TTR4024L1000-GAM5B0B30M-

Product Data - Split System Air Conditioning Units (Small)**Item: A1 Qty: 3 Tag(s): FCU/CU-1-1, FCU/CU-1-2, FCU/CU-2-1****Split System Cooling Outdoor Unit**

4 Ton Nominal Cooling Capacity

200 - 230 Volt 1 Phase 60 Hertz

4 Ton air handler

Programmable 7 day , 3 heat/2 cool thermostat (Fld)

Evaporator defrost control (Fld)

Crankcase heater kit (Fld)

10.80/14.40 kW Htr w/Ckt Brk 208/240/1 (Fld)

Single point entry kit (Fld)

Item: A2 Qty: 2 Tag(s): FCU/CU-2-2, FCU/CU-2-3**Split System Cooling Outdoor Unit**

3 Ton Nominal Cooling Capacity

200 - 230 Volt 1 Phase 60 Hertz

3.5 Ton air handler

Programmable 7 day , 3 heat/2 cool thermostat (Fld)

Evaporator defrost control (Fld)

Crankcase heater kit (Fld)

7.21/9.60 kW Electric Htr w/Ckt Brk for 208/240V 1 Phase 60 Hz (Fld)

Item: A3 Qty: 2 Tag(s): FCU/CU-2-4, FCU/CU-2-5**Split System Cooling Outdoor Unit**

2 Ton Nominal Cooling Capacity

200 - 230 Volt 1 Phase 60 Hertz

2.5 Ton air handler

Programmable 7 day , 3 heat/2 cool thermostat (Fld)

Evaporator defrost control (Fld)

Crankcase heater kit (Fld)

5.77/7.68 kW Electric Htr w/ Ckt Brk for 208/240V 1 Phase 60 Hz (Fld)

Performance Data:

FCU-1-1,1-2,2-1

Performance Data Cooling

Print

3/20/2015

High Speed---U.S. (English)

Capacities are net in Btuh/1000 - indoor fan heat deducted

Outdoor Model 4TTR4048L1

Indoor Model GAM5B0C48M41

ARIREF 7482143

Airflow 1600

Values At ARI Rating Conditions		Correction Factors - Other Airflows		
		Airflow	1400	1800
Total Net Capacity	47500 Btuh	Total Capacity	0.98	1.02
Airflow	1500 CFM	Sensible Capacity	0.93	1.07
Compressor Power	3280 watts	Compressor Kw	0.99	1.01
Indoor Fan Power	440 watts			
Outdoor Fan Power	238 watts			
SEER	14.50			

Rated with 25 Feet 7/8 suction 3/8 liquid lines

O.D.D.B.	I.D.W.B.	TOTAL CAPACITY	SENSIBLE CAPACITY				SYSTEM Kw
			72	75	78	80	
85	59	45.00	39.10	43.70	45.00	45.00	3.42
85	63	47.20	31.60	36.65	41.70	45.10	3.45
85	67	50.40	24.50	29.50	34.60	37.90	3.48
95	59	42.90	38.10	42.20	42.90	42.90	3.85
95	63	45.00	30.70	35.75	40.80	44.10	3.89
95	67	48.10	23.60	28.65	33.70	37.00	3.93
105	63	42.80	29.80	34.85	39.90	42.80	4.33
105	67	45.80	22.70	27.80	32.80	36.20	4.37
105	71	49.70	15.90	20.90	25.90	29.30	4.41
115	63	40.70	29.00	34.00	39.00	40.70	4.77
115	67	43.50	21.90	26.95	32.00	35.30	4.82
115	71	47.10	15.00	20.00	25.10	28.40	4.87
*** 95	67	48.10	IDDB=	80.00	37.00		3.93

*** Performance at selected design conditions

* Dry coil condition (Total Capacity = Sensible Capacity)

Total capacity, compressor Kw and app. dew point valid only for wetcoil

All temperatures in Degree F

FCU-2-2,2-3

Performance Data Cooling

[Print](#)

3/20/2015

High Speed---U.S. (English)

Capacities are net in Btuh/1000 - indoor fan heat deducted

Outdoor Model 4TTR4036L1

Indoor Model GAM5B0C42M31

ARIREF 7482043

Airflow 1200

Values At ARI Rating Conditions		Correction Factors - Other Airflows		
Total Net Capacity	35600 Btuh	Airflow	1050	1350
Airflow	1100 CFM	Total Capacity	0.98	1.02
Compressor Power	2344 watts	Sensible Capacity	0.93	1.07
Indoor Fan Power	243 watts	Compressor Kw	0.99	1.01
Outdoor Fan Power	151 watts			
SEER	15.50			

Rated with 25 Feet 3/4 suction 3/8 liquid lines

O.D.D.B.	I.D.W.B.	TOTAL CAPACITY	SENSIBLE CAPACITY				SYSTEM Kw
			72	75	78	80	
85	59	33.90	29.20	32.80	33.90	33.90	2.38
85	63	35.60	23.80	27.45	31.20	33.70	2.40
85	67	38.00	18.50	22.20	25.90	28.40	2.42
95	59	32.30	28.50	31.65	32.30	32.30	2.66
95	63	33.90	23.10	26.75	30.50	33.00	2.68
95	67	36.20	17.80	21.55	25.20	27.70	2.71
105	63	32.10	22.30	26.05	29.80	32.10	2.96
105	67	34.30	17.10	20.85	24.50	27.00	2.99
105	71	37.30	12.10	15.80	19.50	22.00	3.02
115	63	30.40	21.70	25.35	29.10	30.40	3.25
115	67	32.50	16.50	20.15	23.90	26.30	3.28
115	71	35.30	11.40	15.15	18.80	21.30	3.31
*** 95	67	36.20	IDDB=	80.00	27.70		2.71

*** Performance at selected design conditions

* Dry coil condition (Total Capacity = Sensible Capacity)

Total capacity, compressor Kw and app. dew point valid only for wetcoil

All temperatures in Degree F

FCU-2-4,2-5

Performance Data Cooling

[Print](#)

3/20/2015

High Speed---U.S. (English)

Capacities are net in Btuh/1000 - indoor fan heat deducted

Outdoor Model 4TTR4024L1

Indoor Model GAM5B0B30M21

ARIREF 7481935

Airflow 800

Values At ARI Rating Conditions		Correction Factors - Other Airflows		
Total Net Capacity	24600 Btuh	Airflow	700	900
Airflow	775 CFM	Total Capacity	0.98	1.02
Compressor Power	1598 watts	Sensible Capacity	0.93	1.07
Indoor Fan Power	143 watts	Compressor Kw	0.99	1.01
Outdoor Fan Power	151 watts			
SEER	15.50			

Rated with 25 Feet 3/4 suction 3/8 liquid lines

O.D.D.B.	I.D.W.B.	TOTAL CAPACITY	SENSIBLE CAPACITY				SYSTEM Kw
			72	75	78	80	
85	59	23.20	19.60	22.00	23.20	23.20	1.65
85	63	24.30	16.00	18.40	20.80	22.40	1.66
85	67	26.00	12.50	15.00	17.40	19.00	1.68
95	59	22.10	19.10	21.40	22.10	22.10	1.85
95	63	23.20	15.50	17.90	20.40	22.00	1.87
95	67	24.70	12.10	14.50	16.90	18.50	1.88
105	63	22.00	15.00	17.45	19.90	21.50	2.07
105	67	23.50	11.60	14.00	16.50	18.10	2.09
105	71	25.50	8.30	10.70	13.10	14.80	2.11
115	63	20.90	14.60	17.00	19.40	20.90	2.28
115	67	22.30	11.20	13.60	16.00	17.60	2.30
115	71	24.20	7.90	10.30	12.70	14.30	2.32
*** 95	67	24.70	IDDB=	80.00	18.50		1.88

*** Performance at selected design conditions

* Dry coil condition (Total Capacity = Sensible Capacity)

Total capacity, compressor Kw and app. dew point valid only for wetcoil

All temperatures in Degree F

Mechanical Specifications - Split System Air Conditioning Units (Small)

Item: A1 - A3 Qty: 7 Tag(s): FCU/CU-1-1, FCU/CU-1-2, FCU/CU-2-1, FCU/CU-2-2, FCU/CU-2-3, FCU/CU-2-4, FCU/CU-2-5

GAM5

Air-Tite II cabinet
2% or less air leakage
Precision applied - durable door seals
Specially designed air seal around refrigerant, condensate and conduit connections
Double wall foamed cabinet system
R-4.2 insulating value
No loose fiber design
Smooth cleanable interior design
Sweat eliminating design
Composite foamed cabinet doors
Water proof cabinet design
Integrated horizontal drain pans
Modular cabinet with " allen wrench "quick latch" design
Multi-position up/down flow horizontal left/right
Side return option
Control board protection pocket built into cabinet wall
Alert port to view control board codes without door removal
10 alert codes
Low voltage terminal connection point
Quarter turn phillips head door fasteners
Vortica blower with polarized plug connections and integrated slide deck for easy removal
Patented enhanced coil fin
Dual refrigerant compatible as shipped
Slide in electric heaters with polarized plug connections (sold as accessory)
UVC light kit with safety switch and polarized plug connections (sold as accessory)
Labeled panels and connections
Molded in 1" standard filter rail
High efficiency ECM motor
Soft start fan motor operation
Built in fan delay modes
Maximum width of 23 1/2"
Compact 20 13/16" depth with doors removed
Two tone color
Fused 24v power
Safety door switch
1-year warranty
10-year warranty registered
Optional extended warranty available

Heater Section - 1 Phase Vertical Air Handler

A compartment is provided in the blower section for field installation of supplementary heater. Polarized plugs are provided for making electrical connections to the air handler control box from the supplementary heater.

4TTR4 - General

The Outdoor Units are fully charged from the factory for up to 15 feet of piping. This unit is designed to operate at outdoor ambient temperatures as high as 115F. Cooling capacities are matched with a wide selection of air handlers and furnace coils that are AHRI certified. The unit is certified to UL 1995. Exterior is designed for outdoor application.

4TTR4 - Casing

Unit casing is constructed of heavy gauge, G60 galvanized steel and painted with a weather resistant powder paint on all louvered panels and prepaint on all other panels. Corrosion and weatherproof CMBP-G30 base.

4TTR4 - Refrigerant Controls

Refrigeration system controls include condenser fan, compressor contactor and high pressure switch. High and low pressure controls are inherent to the compressor. A factory supplied liquid line drier is standard. Some models may require field installation.

4TTR4 - Compressor

The compressor features internal over temperature, pressure protection and total dipped hermetic motor. Other features include: Centrifugal oil pump and low vibration and noise.

4TTR4 - Condenser Coil

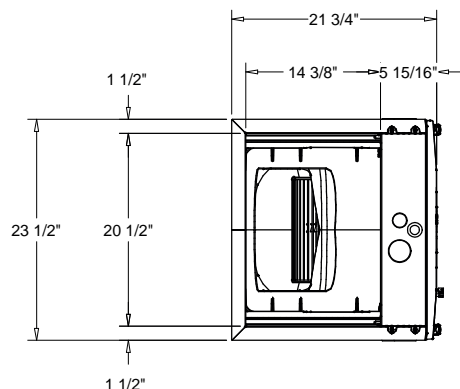
The outdoor coil provides low airflow resistance and efficient heat transfer. The coil is protected on all four sides by louvered panels.

4TTR4 - Low Ambient Cooling

As manufactured, this system has a cooling capacity to 55F. The addition of an evaporator defrost control permits operation to 40F. The addition of an evaporator defrost control with TXV permits low ambient cooling to 30F.

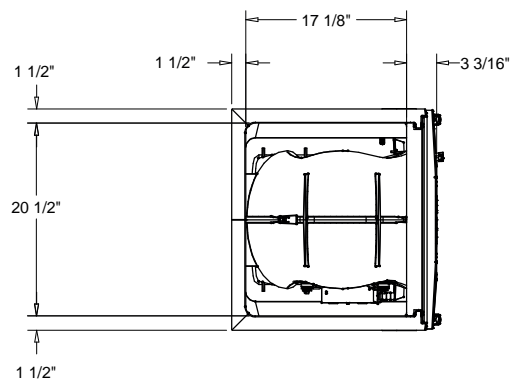
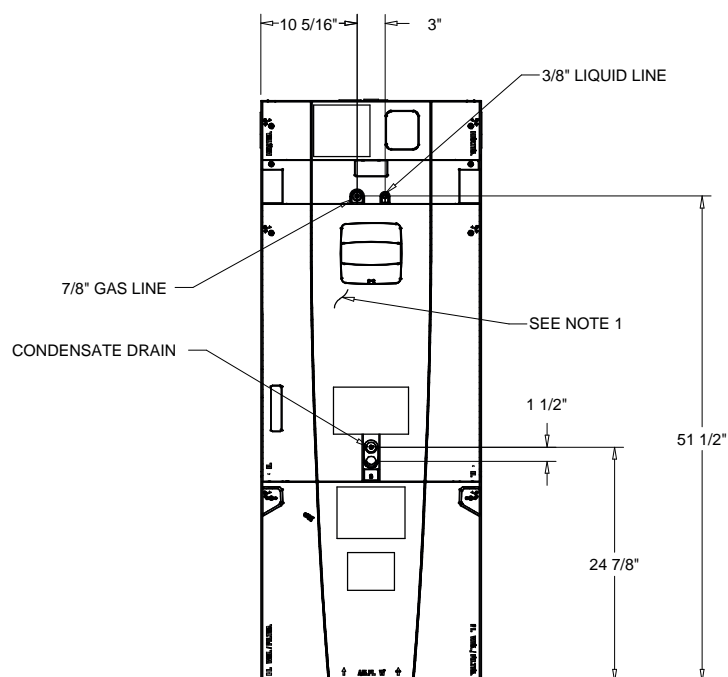
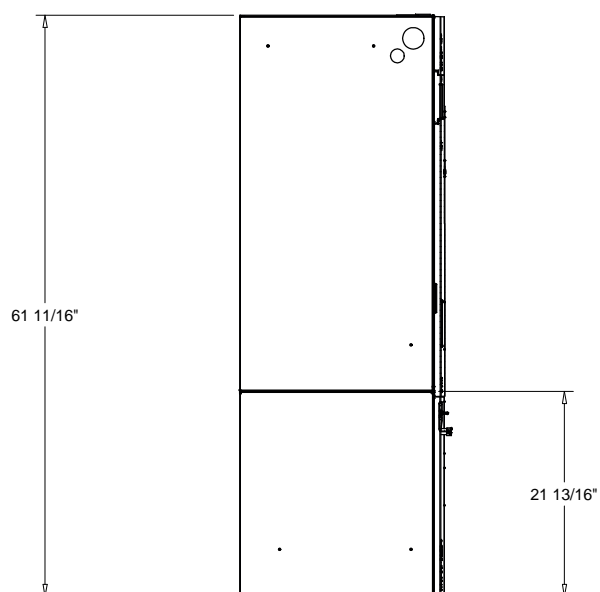
Unit Dimensions - Split System Air Conditioning Units (Small)

Item: A1 Qty: 3 Tag(s): FCU/CU-1-1, FCU/CU-1-2, FCU/CU-2-1



NOTES:

1. BADGE ROTATION WILL KEEP BRAND IN CORRECT POSITION.
2. NO INTERNAL MODIFICATIONS REQUIRED FOR ANY POSITION.
3. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION
4. GAM5 AIR HANDLERS ARE ALL TWO PIECE CABINETS.
5. SEE WEIGHT AND RIGGING PAGE FOR CONDENSATE DRAIN CONFIGURATION



GAM5A0A48 & 60 AIR HANDLER

UNIT DIMENSION DRAWING

Unit Dimensions - Split System Air Conditioning Units (Small)
Item: A1 Qty: 3 Tag(s): FCU/CU-1-1, FCU/CU-1-2, FCU/CU-2-1

ELECTRICAL / GENERAL DATA

GENERAL ⁽¹⁾⁽²⁾⁽⁴⁾ Model: GAM5A0C48M41SA Unit Primary Voltage: 208 Unit Secondary Voltage: 230 Unit Hertz: 60 Unit Phase: 1	INDOOR MOTOR ⁽¹⁾ Number: 1 Horsepower: 0.75 Motor Speed (RPM): 1050 Phase: 1 Full Load Amps: 6.0 Locked Rotor Amps:	FILTERS ⁽³⁾ Type: Throwaway Furnished: No Number: 1 Recommended: 22"x20"x1"
STANDARD ⁽⁵⁾ 230 Volt / 208 Volt Minimum Circuit Ampacity: 8.0/8.0 Maximum Overload Protection: 15.0/15.0	REFRIGERANT Type: R410 REF. Line Connections: Brazed Coupling or Conn. Size - Gas: 7/8" Coupling or Conn. Size - Liq.: 3/8"	Weights Net: 166.0 lb Shipping: 176.0 lb

ELECTRIC HEAT 230 Volt / 208 Volt Capacity Circuit #1: 9.60/7.20 Capacity Circuit #2: 4.80/3.60 Capacity Circuit #3: N/A # of Circuit: 2 Phase: 1 Heater Amps Per Circuit Circuit #1: 40.0/34.6 Heater Amps Per Circuit Circuit #2: 20.0/17.3 Heater Amps Per Circuit Circuit #3: N/A Minimum Circuit Ampacity Circuit #1: 58.0/51.0 Minimum Circuit Ampacity Circuit #2: 25.0/22.0 Minimum Circuit Ampacity Circuit #3: N/A Maximum Overload Protection Circuit #1: 60.0/60.0 Maximum Overload Protection Circuit #2: 25.0/25.0 Maximum Overload Protection Circuit #3: N/A	
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NOTES:

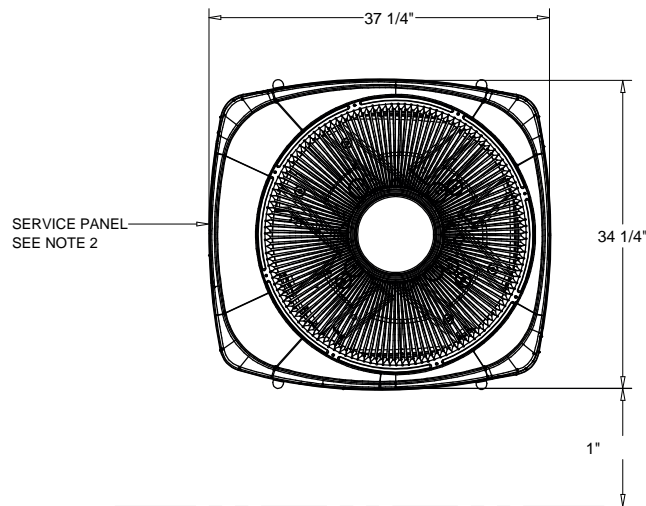
1. These air handlers are a.r.i. certified with various split system air conditioners and heat pumps (ari standard 210/240). refer to the split system outdoor unit product data guides for performance data.
2. 3/4" male plastic pipe (ref.: astm 1785-76)
3. Minimum filter size for horizontal applications will be based on airflow selection and will be calculated as follows:
low velocity filter: face area (sq. ft.) = cfm / 300
high velocity filter: face area (sq. ft.) = cfm / 500
4. For customer ease of filter maintenance, it is recommended that a properly sized, remote filter and grille be installed for horizontal applications. airflow should not exceed the face value of the filter being used
5. Standard mca and mop without electric heat.

Correct Single Point Electrical, with single point connection kit (fld):

Voltage 208/1
Elec Heat 10.8kw
FLA 51.9a
MCA 74a
MOP 80a

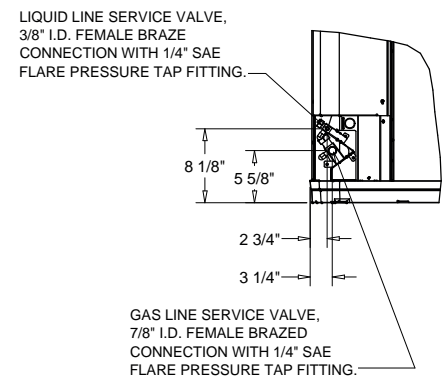
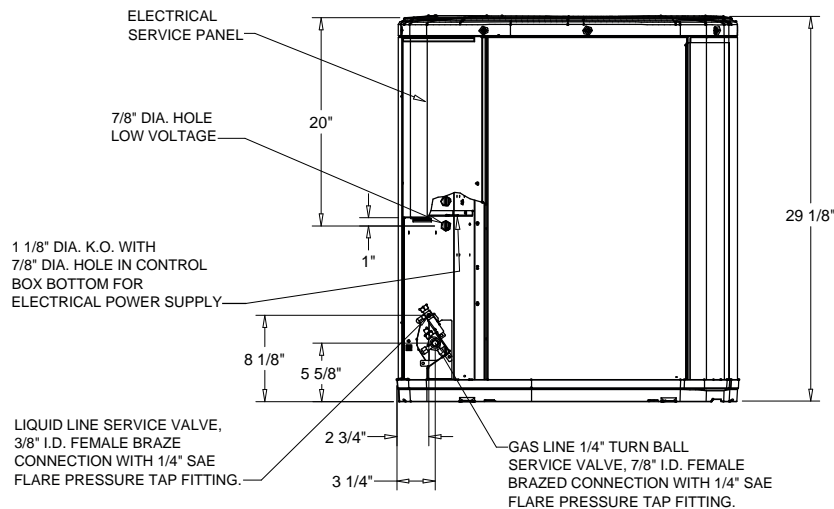
Unit Dimensions - Split System Air Conditioning Units (Small)

Item: A1 Qty: 3 Tag(s): FCU/CU-1-1, FCU/CU-1-2, FCU/CU-2-1



NOTES

1. TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR AT LEAST 60" ABOVE UNIT. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ON UNIT, AND SHOULD BE AT LEAST 12" FROM WALL AND ALL SURROUNDING SHRUBBERY ON TWO SIDES. OTHER TWO SIDES UNRESTRICTED.
2. ELECTRICAL AND REFRIGERANT COMPONENT CLEARANCES PER PREVAILING CODES.



Unit Dimensions - Split System Air Conditioning Units (Small)

Item: A1 Qty: 3 Tag(s): FCU/CU-1-1, FCU/CU-1-2, FCU/CU-2-1

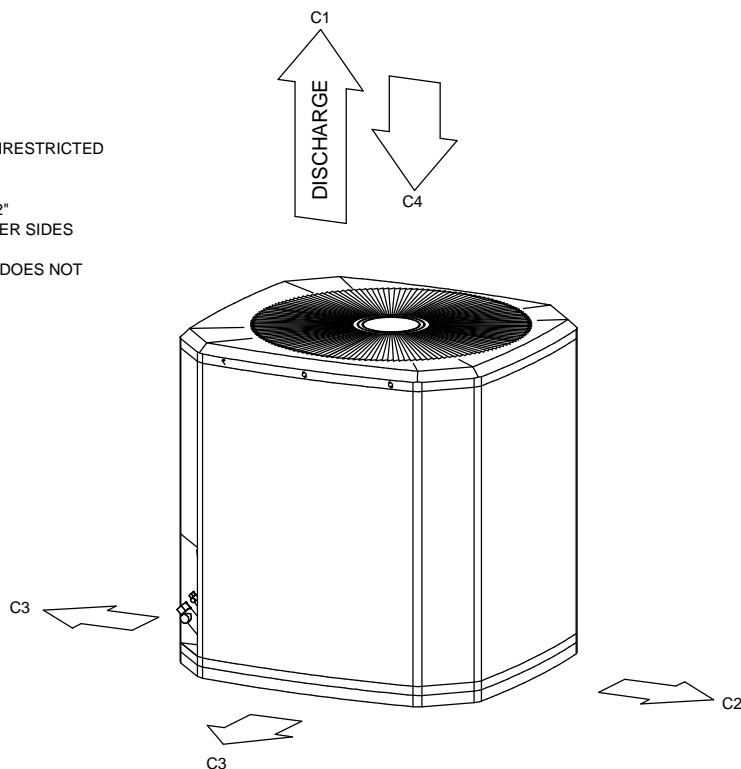
ELECTRICAL / GENERAL DATA

GENERAL Model: 4TTR4048 Voltage: 208 - 230 Unit Hertz: 60 Unit Phase: 1	POWER CONN. Minimum Circuit Ampacity: 24.0 Maximum Circuit Breaker: 40.0 Minimum Protection Rating: 40.0	COMPRESSOR Number: 1 Phase: 1 Rated Load Amps: 18.5 Locked Rotor Amps: 124.0
OUTDOOR MOTOR Number: 1 Horsepower: 0.20 Motor Speed (RPM): - Phase: 1 Full Load Amps: 0.95 Locked Rotor Amps: -	NOTES: 1. Certified in accordance with the Unitary Air-Conditioner equipment certification program which is based on AHRI Standard 210/240. 2. Calculated in accordance with N.E.C. Use only HACR circuit breakers or fuses. 3. Standard line lengths - 60'. Standard lift - 60' Suction and Liquid line. For Greater lengths and lifts refer to refrigerant piping software Pub# 32-3312-0 4. * = 15, 20, 25, 30, 40 and 50 foot lineset available.	
REFRIGERANT Type: R-410 Charge: 6.6 lb Line Size O.D. Gas: 7/8" Line Size O.D. LIQ: 3/8"		

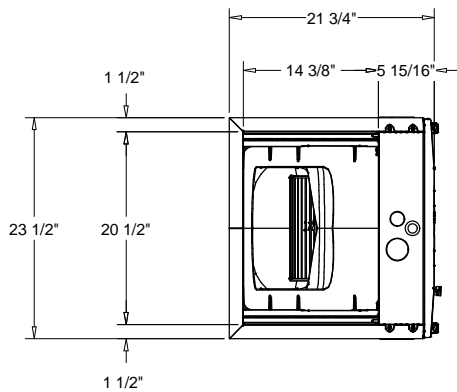
WEIGHT	
NET	189.0 lb
SHIPPING	212.0 lb

NOTES:

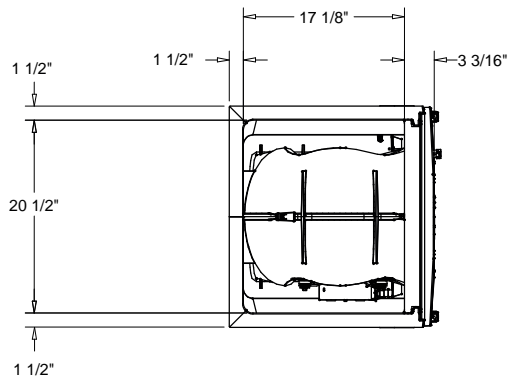
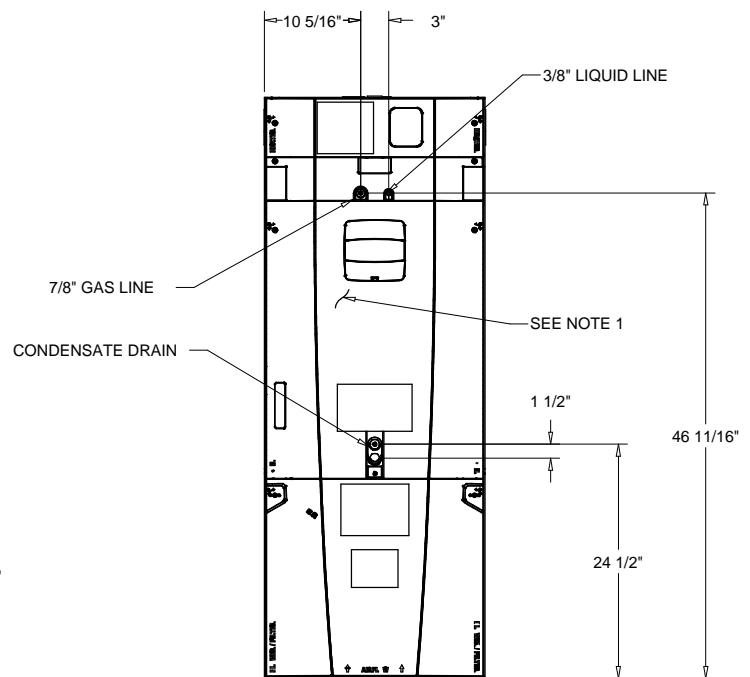
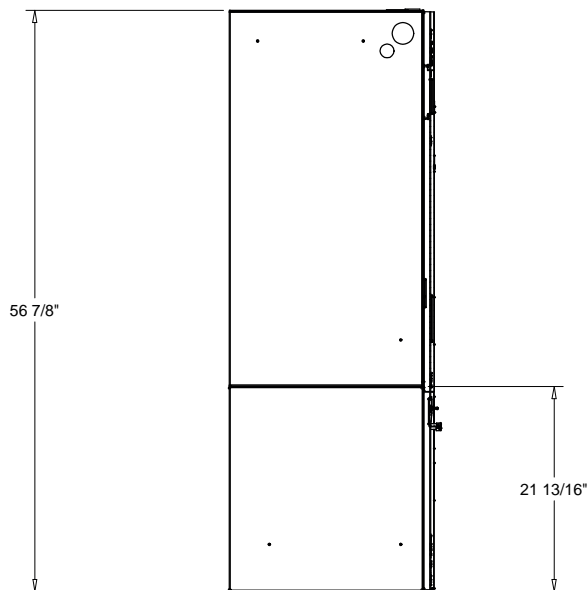
- C1. TOP DISCHARGE SHOULD BE UNRESTRICTED FOR AT LEAST 60" ABOVE UNIT
- C2. PLACE UNIT FROM WALL
- C3. PLACE SHRUBBERY AT LEAST 12" FROM UNIT ON TWO SIDES, OTHER SIDES UNRESTRICTED
- C4. PLACE UNIT SO ROOF RUN-OFF DOES NOT FALL DIRECTLY ON UNIT



WEIGHT AND CLEARANCE

Unit Dimensions - Split System Air Conditioning Units (Small)**Item: A2 Qty: 2 Tag(s): FCU/CU-2-2, FCU/CU-2-3****NOTES:**

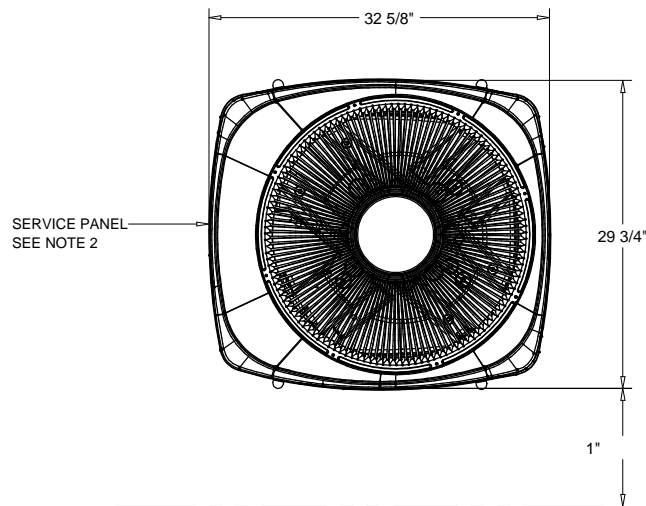
1. BADGE ROTATION WILL KEEP BRAND IN CORRECT POSITION.
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3. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION
4. GAM5 AIR HANDLERS ARE ALL TWO PIECE CABINETS.
5. SEE WEIGHT AND RIGGING PAGE FOR CONDENSATE DRAIN CONFIGURATION

**GAM5A0A42 AIR HANDLER**

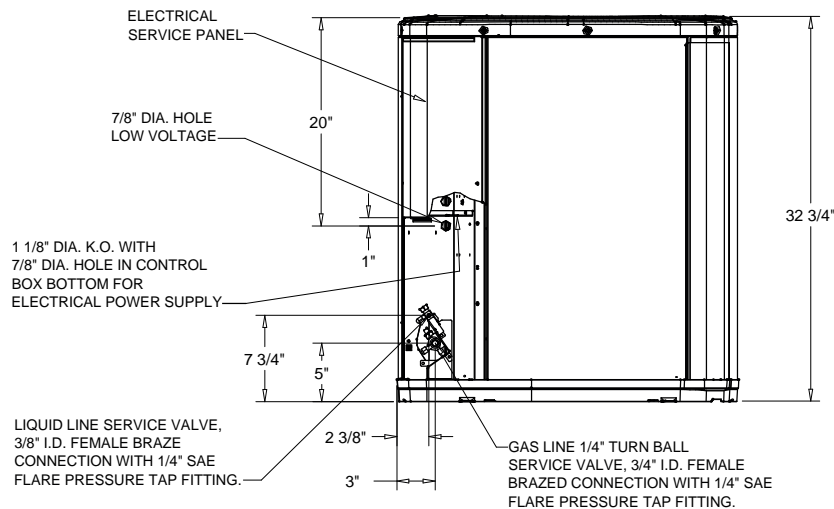
UNIT DIMENSION DRAWING

Unit Dimensions - Split System Air Conditioning Units (Small)**Item: A2 Qty: 2 Tag(s): FCU/CU-2-2, FCU/CU-2-3****ELECTRICAL / GENERAL DATA**

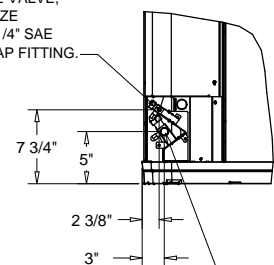
GENERAL ⁽¹⁾⁽²⁾⁽⁴⁾ Model: GAM5A0C42M31SA Unit Primary Voltage: 208 Unit Secondary Voltage: 230 Unit Hertz: 60 Unit Phase: 1	INDOOR MOTOR ⁽¹⁾ Number: 1 Horsepower: 0.5 Motor Speed (RPM): 1050 Phase: 1 Full Load Amps: 4.1 Locked Rotor Amps:	FILTERS ⁽³⁾ Type: Throwaway Furnished: No Number: 1 Recommended: 22"x20"x1"
STANDARD ⁽⁵⁾ 230 Volt / 208 Volt Minimum Circuit Ampacity: 5.0/5.0 Maximum Overload Protection: 15.0/15.0	REFRIGERANT Type: R410 REF. Line Connections: Brazed Coupling or Conn. Size - Gas: 7/8" Coupling or Conn. Size - Liq.: 3/8"	Weights Net: 153.0 lb Shipping: 163.0 lb
ELECTRIC HEAT 230 Volt / 208 Volt Capacity Circuit #1: 9.60kW/7.20kW Capacity Circuit #2: N/A Capacity Circuit #3: N/A # of Circuit: 1 Phase: 1 Heater Amps Per Circuit Circuit #1: 40.0/34.60 Heater Amps Per Circuit Circuit #2: N/A Heater Amps Per Circuit Circuit #3: N/A Minimum Circuit Ampacity Circuit #1: 55.0/48.0 Minimum Circuit Ampacity Circuit #2: N/A Minimum Circuit Ampacity Circuit #3: N/A Maximum Overload Protection Circuit #1: 60.0/50.0 Maximum Overload Protection Circuit #2: N/A Maximum Overload Protection Circuit #3: N/A	NOTES: 1. These air handlers are a.r.i. certified with various split system air conditioners and heat pumps (ari standard 210/240). refer to the split system outdoor unit product data guides for performance data. 2. 3/4" male plastic pipe (ref.: astm 1785-76) 3. Minimum filter size for horizontal applications will be based on airflow selection and will be calculated as follows: low velocity filter: face area (sq. ft.) = cfm / 300 high velocity filter: face area (sq. ft.) = cfm / 500 4. For customer ease of filter maintenance, it is recommended that a properly sized, remote filter and grille be installed for horizontal applications. airflow should not exceed the face value of the filter being used 5. Standard mca and mop without electric heat.	

Unit Dimensions - Split System Air Conditioning Units (Small)**Item: A2 Qty: 2 Tag(s): FCU/CU-2-2, FCU/CU-2-3****NOTES**

1. TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR AT LEAST 60" ABOVE UNIT. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ON UNIT, AND SHOULD BE AT LEAST 12" FROM WALL AND ALL SURROUNDING SHRUBBERY ON TWO SIDES. OTHER TWO SIDES UNRESTRICTED.
2. ELECTRICAL AND REFRIGERANT COMPONENT CLEARANCES PER PREVAILING CODES.



LIQUID LINE SERVICE VALVE,
3/8" I.D. FEMALE BRAZE
CONNECTION WITH 1/4" SAE
FLARE PRESSURE TAP FITTING.



GAS LINE SERVICE VALVE,
3/4" I.D. FEMALE BRAZED
CONNECTION WITH 1/4" SAE
FLARE PRESSURE TAP FITTING.

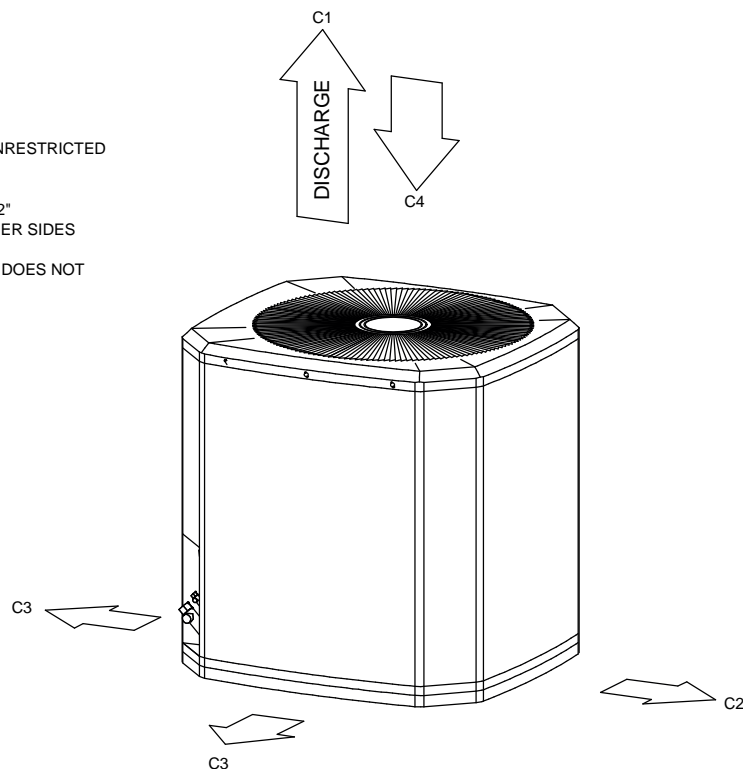
Unit Dimensions - Split System Air Conditioning Units (Small)**Item: A2 Qty: 2 Tag(s): FCU/CU-2-2, FCU/CU-2-3****ELECTRICAL / GENERAL DATA**

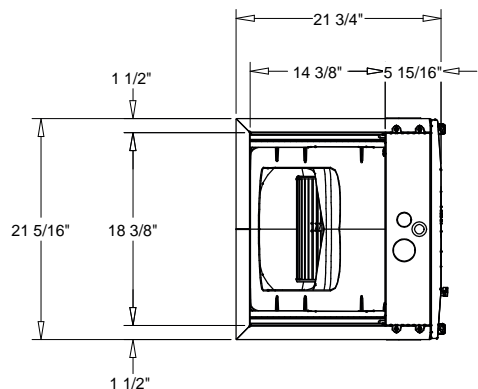
GENERAL Model: 4TTR4036 Voltage: 208 - 230 Unit Hertz: 60 Unit Phase: 1	POWER CONN. Minimum Circuit Ampacity: 18.0 Maximum Circuit Breaker: 30.0 Minimum Protection Rating: 30.0	COMPRESSOR Number: 1 Phase: 1 Rated Load Amps: 14.1 Locked Rotor Amps: 72.0
OUTDOOR MOTOR Number: 1 Horsepower: 0.125 Motor Speed (RPM): - Phase: 1 Full Load Amps: 0.64 Locked Rotor Amps: -	NOTES: 1. Certified in accordance with the Unitary Air-Conditioner equipment certification program which is based on AHRI Standard 210/240. 2. Calculated in accordance with N.E.C. Use only HACR circuit breakers or fuses. 3. Standard line lengths - 60'. Standard lift - 60' Suction and Liquid line. For Greater lengths and lifts refer to refrigerant piping software Pub# 32-3312-0 4. * = 15, 20, 25, 30, 40 and 50 foot lineset available.	
REFRIGERANT Type: R-410 Charge: 6.1 lb Line Size O.D. Gas: 3/4" Line Size O.D. LIQ: 3/8"		

WEIGHT	
NET	156.0 lb
SHIPPING	183.0 lb

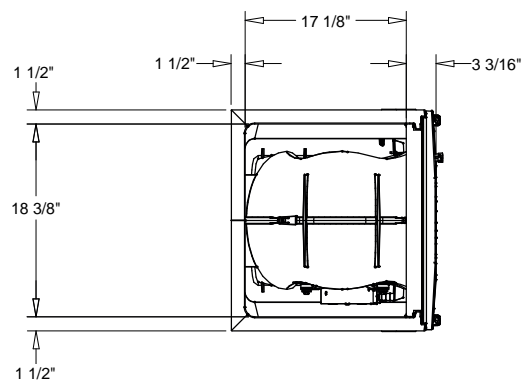
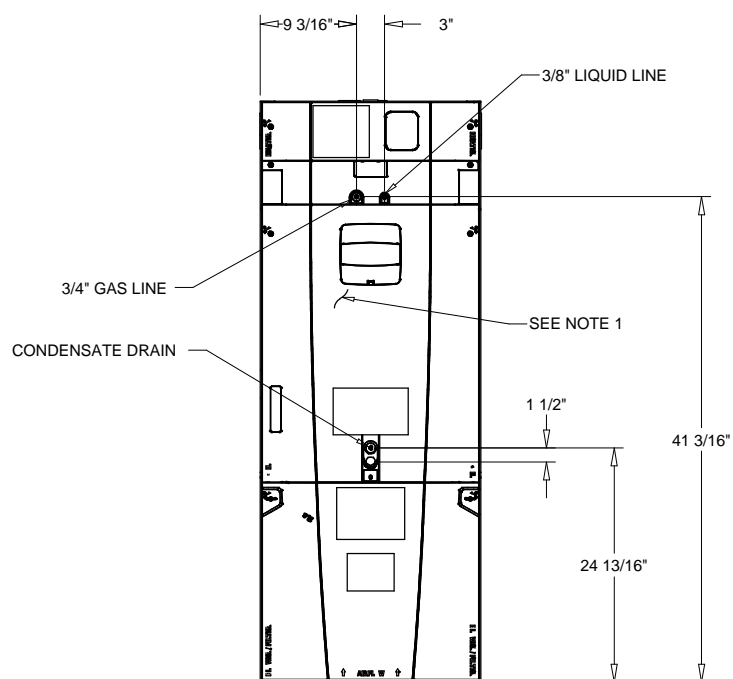
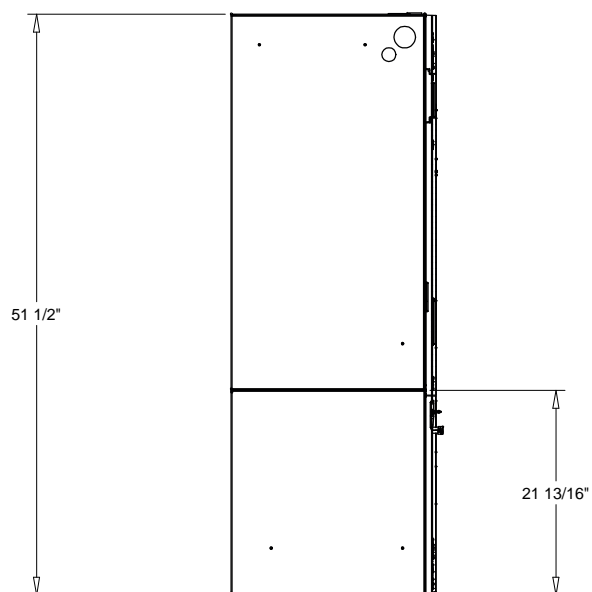
NOTES:

- C1. TOP DISCHARGE SHOULD BE UNRESTRICTED
FOR AT LEAST 60" ABOVE UNIT
- C2. PLACE UNIT FROM WALL
- C3. PLACE SHRUBBERY AT LEAST 12"
FROM UNIT ON TWO SIDES, OTHER SIDES
UNRESTRICTED
- C4. PLACE UNIT SO ROOF RUN-OFF DOES NOT
FALL DIRECTLY ON UNIT

**WEIGHT AND CLEARANCE**

Unit Dimensions - Split System Air Conditioning Units (Small)**Item: A3 Qty: 2 Tag(s): FCU/CU-2-4, FCU/CU-2-5****NOTES:**

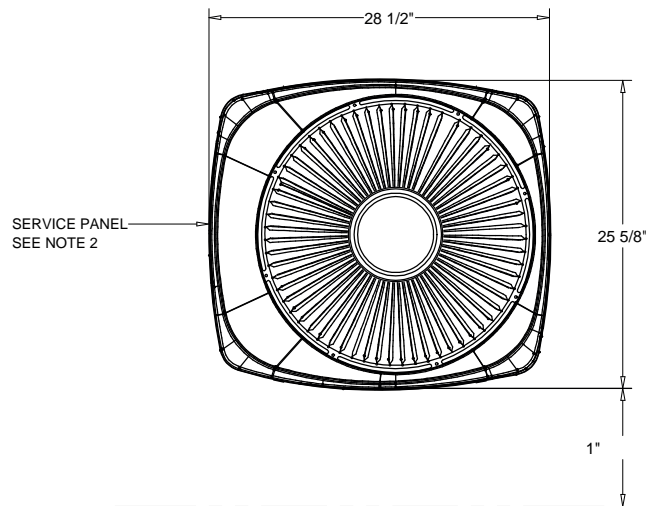
1. BADGE ROTATION WILL KEEP BRAND IN CORRECT POSITION.
2. NO INTERNAL MODIFICATIONS REQUIRED FOR ANY POSITION.
3. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION.
4. GAM5 AIR HANDLERS ARE ALL TWO PIECE CABINETS.
5. SEE WEIGHT AND RIGGING PAGE FOR CONDENSATE DRAIN CONFIGURATION.

**GAM5A0A30 AIR HANDLER**

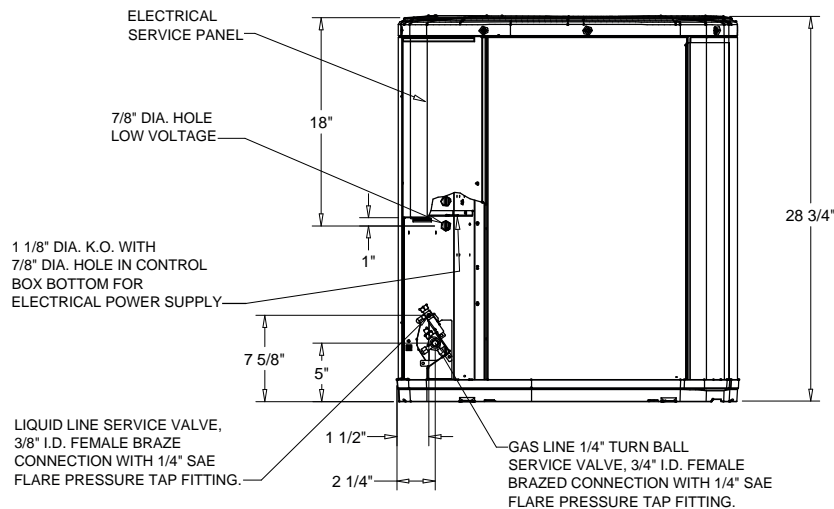
UNIT DIMENSION DRAWING

Unit Dimensions - Split System Air Conditioning Units (Small)**Item: A3 Qty: 2 Tag(s): FCU/CU-2-4, FCU/CU-2-5****ELECTRICAL / GENERAL DATA**

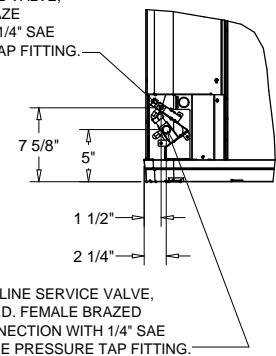
GENERAL ⁽¹⁾⁽²⁾⁽⁴⁾ Model: GAM5A0B30M21SA Unit Primary Voltage: 208 Unit Secondary Voltage: 230 Unit Hertz: 60 Unit Phase: 1	INDOOR MOTOR ⁽¹⁾ Number: 1 Horsepower: 0.33 Motor Speed (RPM): 1050 Phase: 1 Full Load Amps: 2.8 Locked Rotor Amps: -	FILTERS ⁽³⁾ Type: Throwaway Furnished: No Number: 1 Recommended: 20"x20"x1"
STANDARD ⁽⁵⁾ 230 Volt / 208 Volt Minimum Circuit Ampacity: 4.0/4.0 Maximum Overload Protection: 15.0/15.0	REFRIGERANT Type: R410 REF. Line Connections: Brazed Coupling or Conn. Size - Gas: 3/4" Coupling or Conn. Size - Liq.: 3/8"	Weights Net: 132.0 lb Shipping: 140.0 lb
ELECTRIC HEAT 230 Volt / 208 Volt Capacity Circuit #1: 7.68kW/5.76kW Capacity Circuit #2: N/A Capacity Circuit #3: N/A # of Circuit: 1 Phase: 1 Heater Amps Per Circuit Circuit #1: 32.0/27.70 Heater Amps Per Circuit Circuit #2: N/A Heater Amps Per Circuit Circuit #3: N/A Minimum Circuit Ampacity Circuit #1: 44.0/38.0 Minimum Circuit Ampacity Circuit #2: N/A Minimum Circuit Ampacity Circuit #3: N/A Maximum Overload Protection Circuit #1: 45.0/40.0 Maximum Overload Protection Circuit #2: N/A Maximum Overload Protection Circuit #3: N/A	NOTES: 1. These air handlers are a.r.i. certified with various split system air conditioners and heat pumps (ari standard 210/240). refer tothesplit system outdoor unit product data guides for performance data. 2. 3/4" male plastic pipe (ref.: astm 1785-76) 3. Minimum filter size for horizontal applications will be based on airflow selection and will be calculated as follows: low velocity filter: face area (sq. ft.) = cfm / 300 high velocity filter: face area (sq. ft.) = cfm / 500 4. For customer ease of filter maintenance, it is recommended that a properly sized, remote filter and grille be installed for horizontal applications. airflow should not exceed the face value of the filter being used 5. Standard mca and mop without electric heat.	

Unit Dimensions - Split System Air Conditioning Units (Small)**Item: A3 Qty: 2 Tag(s): FCU/CU-2-4, FCU/CU-2-5****NOTES**

1. TOP DISCHARGE AREA SHOULD BE UNRESTRICTED FOR AT LEAST 60" ABOVE UNIT. UNIT SHOULD BE PLACED SO ROOF RUN-OFF WATER DOES NOT POUR DIRECTLY ON UNIT, AND SHOULD BE AT LEAST 12" FROM WALL AND ALL SURROUNDING SHRUBBERY ON TWO SIDES. OTHER TWO SIDES UNRESTRICTED.
2. ELECTRICAL AND REFRIGERANT COMPONENT CLEARANCES PER PREVAILING CODES.



LIQUID LINE SERVICE VALVE,
3/8" I.D. FEMALE BRAZE
CONNECTION WITH 1/4" SAE
FLARE PRESSURE TAP FITTING.



GAS LINE SERVICE VALVE,
3/4" I.D. FEMALE BRAZED
CONNECTION WITH 1/4" SAE
FLARE PRESSURE TAP FITTING.

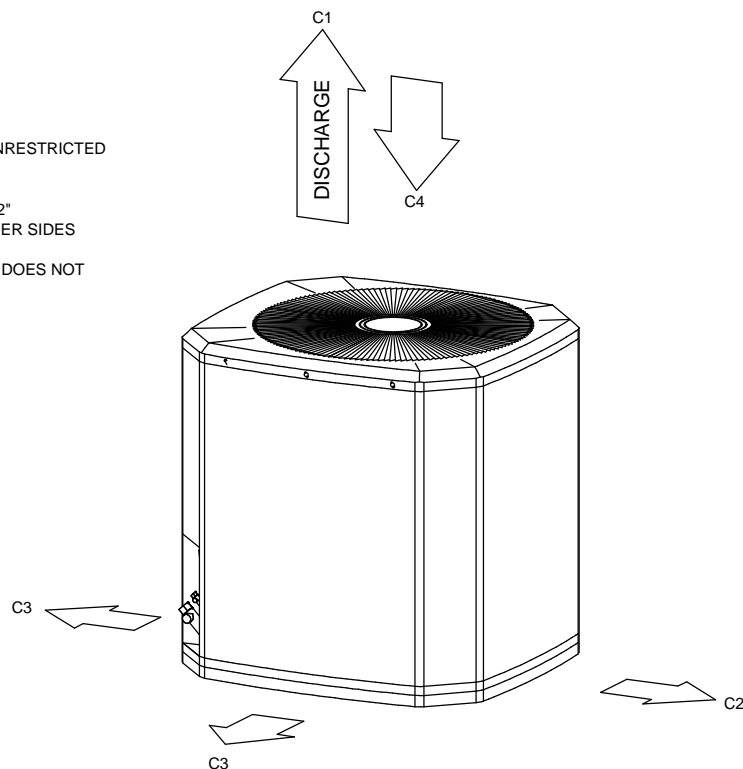
Unit Dimensions - Split System Air Conditioning Units (Small)**Item: A3 Qty: 2 Tag(s): FCU/CU-2-4, FCU/CU-2-5****ELECTRICAL / GENERAL DATA**

GENERAL Model: 4TTR4024 Voltage: 208 - 230 Unit Hertz: 60 Unit Phase: 1	POWER CONN. Minimum Circuit Ampacity: 14.0 Maximum Circuit Breaker: 25.0 Minimum Protection Rating: 25.0	COMPRESSOR Number: 1 Phase: 1 Rated Load Amps: 10.9 Locked Rotor Amps: 63.0
OUTDOOR MOTOR Number: 1 Horsepower: 0.06 Motor Speed (RPM): - Phase: 1 Full Load Amps: 0.60 Locked Rotor Amps: -	NOTES: 1. Certified in accordance with the Unitary Air-Conditioner equipment certification program which is based on AHRI Standard 210/240. 2. Calculated in accordance with N.E.C. Use only HACR circuit breakers or fuses. 3. Standard line lengths - 60'. Standard lift - 60' Suction and Liquid line. For Greater lengths and lifts refer to refrigerant piping software Pub# 32-3312-0 4. * = 15, 20, 25, 30, 40 and 50 foot lineset available.	
REFRIGERANT Type: R-410 Charge: 4.7 lb Line Size O.D. Gas: 3/4" Line Size O.D. LIQ: 3/8"		

WEIGHT	
NET	133.0 lb
SHIPPING	153.0 lb

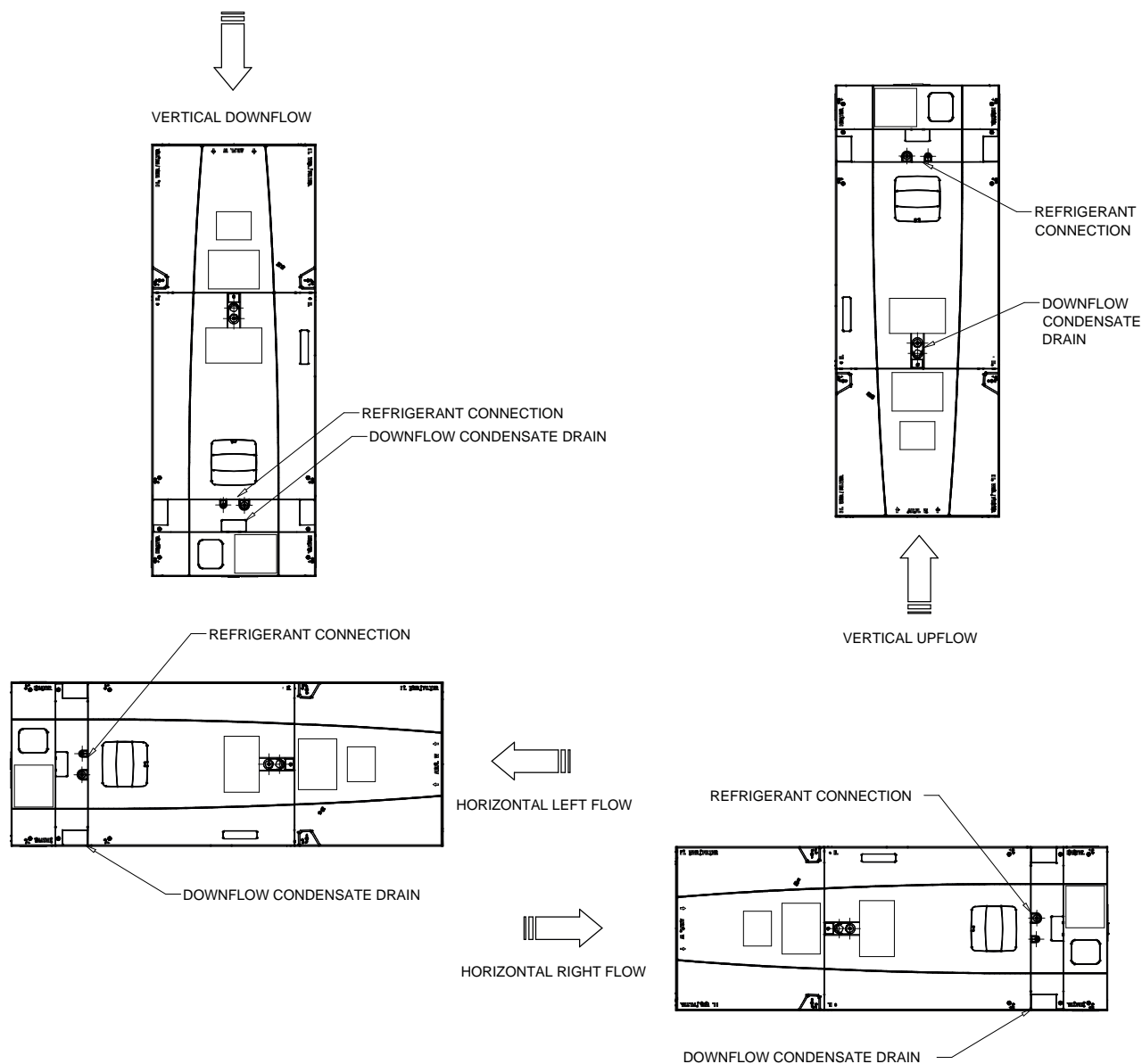
NOTES:

- C1. TOP DISCHARGE SHOULD BE UNRESTRICTED FOR AT LEAST 60" ABOVE UNIT
- C2. PLACE UNIT FROM WALL
- C3. PLACE SHRUBBERY AT LEAST 12" FROM UNIT ON TWO SIDES, OTHER SIDES UNRESTRICTED
- C4. PLACE UNIT SO ROOF RUN-OFF DOES NOT FALL DIRECTLY ON UNIT

**WEIGHT AND CLEARANCE**

Weight, Clearance & Rigging Diagram - Split System Air Conditioning Units (Small)

Item: A1 - A3 Qty: 7 Tag(s): FCU/CU-1-1, FCU/CU-1-2, FCU/CU-2-1, FCU/CU-2-2, FCU/CU-2-3, FCU/CU-2-4, FCU/CU-2-5

**NOTES**

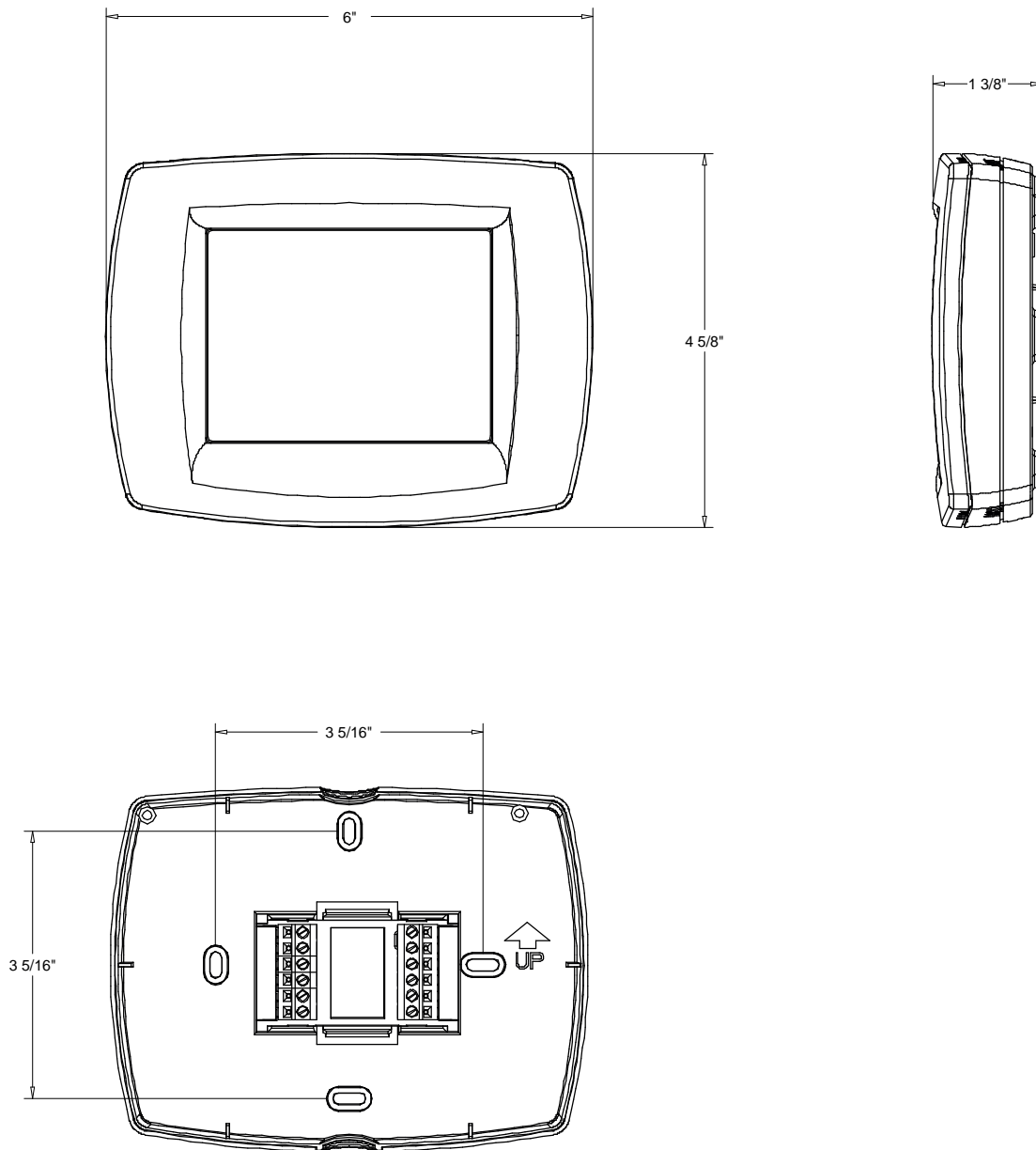
1. NO INTERNAL MODIFICATIONS REQUIRED FOR ANY POSITION.
2. BADGE ROTATION WILL BRAND IN CORRECT POSITION.

MINIMUM UNIT CLEARANCE TABLE		
	TO COMBUSTIBLE MATERIALS (REQUIRED)	SERVICE CLEARANCE (RECOMMENDED)
SIDE	0	2"
FRONT	0	21"
BACK	0	0
INLET DUCT	0	0
OUTLET DUCT	0	0

CLEARANCE NOTES:
 * 1" FOR THE FIRST 3 FT. OF OUTLET DUCT
 WHEN ELECTRIC HEATERS ARE INSTALLED EXCEPT
 MODELS BAYHTR1405, 1408, AND 1410 ARE APPROVED FOR
 0" PLENUM AND DUCT CLEARANCE IN THE UPFLOW
 CONFIGURATION ONLY ON TWE-P MODELS.

Accessory - Split System Air Conditioning Units (Small)

Item: A1 - A3 Qty: 7 Tag(s): FCU/CU-1-1, FCU/CU-1-2, FCU/CU-2-1, FCU/CU-2-2, FCU/CU-2-3, FCU/CU-2-4, FCU/CU-2-5



TCONT200

ACCESSORY - THERMOSTAT

Field Installed Options - Part/Order Number Summary

This is a report to help you locate field installed options that arrive at the jobsite. This report provides part or order numbers for each field installed option, and references it to a specific product tag. It is NOT intended as a bill of material for the job.

Product Family - Split System Air Conditioning Units (Small)

Item	Tag(s)	Qty	Description	Model Number
A1	FCU/CU-1-1, FCU/CU-1-2, FCU/CU-2-1	3	4 Ton Split A/C	4TTR4048L1000- GAM5B0C48M-1S -0----000-0--0

Field Installed Option Description	Part/Ordering Number
Programmable 7 day , 3 heat/2 cool thermostat	TCONT802AS32DA
Evaporator defrost control	AY28X079
Crankcase heater kit	BAYCCHT301
Single point entry kit	BAYSPEKT200A
10.80/14.40 kW Htr w/Ckt Brk 208/240/1	BAYEABC15BK1BA

Item	Tag(s)	Qty	Description	Model Number
A2	FCU/CU-2-2, FCU/CU-2-3	2	3 Ton Split A/C	4TTR4036L1000- GAM5B0000M-1S- 0----000-0--0

Field Installed Option Description	Part/Ordering Number
7.21/9.60 kW Electric Htr w/Ckt Brk for 208/240V 1 Phase 60 Hz	BAYEAAAC10BK1BA
Programmable 7 day , 3 heat/2 cool thermostat	TCONT802AS32DA
Evaporator defrost control	AY28X079
Crankcase heater kit	BAYCCHT302

Item	Tag(s)	Qty	Description	Model Number
A3	FCU/CU-2-4, FCU/CU-2-5	2	2 Ton Split A/C	4TTR4024L1000- GAM5B0B30M-1S- 0----000-0--0

Field Installed Option Description	Part/Ordering Number
Programmable 7 day , 3 heat/2 cool thermostat	TCONT802AS32DA
Evaporator defrost control	AY28X079
Crankcase heater kit	BAYCCHT302
5.77/7.68 kW Electric Htr w/ Ckt Brk for 208/240V 1 Phase 60 Hz	BAYEAAAC08BK1BA



HVAC Submittal Cover Sheet

SECTION: 2

PRODUCT: Aaon Split Systems

Paulson-Cheek Mechanical, Inc.
6145 Norhtbelt Parkway, Suite F
Norcross, GA 30071

PHONE: 770-729-0076
FAX: 770-729-1076

PROJECT: **Northside Facial Cosmetic Surgery**

LOCATION: **Alpharetta, GA**

Paulson-Cheek Mechanical, Inc.

ARCHITECT'S/ENGINEER'S STAMP

Paulson-Cheek Mechanical, Inc.

DATE RECEIVED:	03/25/15
MANUFACTURER:	Aaon
SUPPLIER:	Hill Co
SUBMITTED DATE:	03/25/15

☒ NO ERRORS DETECTED

☐ CORRECT EXCEPTIONS NOTED

THIS APPROVAL OF SHOP DRAWINGS DOES
NOT RELIEVE THE SUBCONTRACTOR OR VENDOR
FROM THE REQUIREMENTS OF THE CONTRACT
DOCUMENTS.

CHECKED BY:	Mark Walden
DATE CHECKED:	03/25/15



P.O. Box 699
Roswell, Georgia 30077
Contractor Reg. No. CN003050

770-751-0850
770-751-0070 Facsimile
www.hillcompany.com



SUBMITTAL

FOR

Split Systems FCU-1-3, FCU-1-4

Project:

Northside Facial Cosmetic Surgery

Alpharetta, GA

Mechanical Contractor

Paulson-Cheek Mechanical
6145 Northbelt Parkway
Norcross, GA 30071

Mechanical Engineer

AHA Consulting Engineers
1801 Old Alabama Road, Suite 125
Roswell, GA 30076

SUBMITTED BY:

HILL COMPANY, INC.
1305 Old Ellis Rd.
Roswell, GA 30076
dbegley@hillcompany.com
Phone: 770 480-2328
www.hillcompany.com

March 17, 2015

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I. Notes, Clarifications, and Deviations

II. Specifications

III. Performance

IV. Selected Options

V. Drawings

VI. Field Piping

VII. Controls

Notes, Clarifications, and Deviations

Notes, Clarifications, and Deviations to Specifications & Schedule

- Contractor to verify voltage. Units are submitted with 208/1/60.
- Contractor to verify refrigerant line lengths and elbow quantities to allow for correct line sizing.
- Contractor to verify handing of unit for line connections.
- FCU fan will be provided with EC motor to be used for balancing. The units will run at constant speed per the drawings/specifications.
- Mechanical contractor is responsible for mounting and wiring of control panel and loose sensors.
- Lead times are currently 9 weeks.

Specifications

Guide Specifications - Air Handling Units FCU-1-3 and FCU-1-4

Part 1 - General

1.01 General Description

- A. This section includes the design, controls, and installation requirements for indoor air handling units.

1.02 Quality Assurance

- A. Unit shall be certified in accordance with UL Standard 1995/CSA C22.2 No. 236, Safety Standard for Heating and Cooling Equipment.
- B. Unit and refrigeration system shall comply with ASHRAE 15, Safety Standard for Mechanical Refrigeration.
- C. Unit Seasonal Energy Efficiency Ratio (SEER) shall be equal to or greater than that prescribed by ASHRAE 90.1, Energy Efficient Design of New Buildings except Low-Rise Residential Buildings.
- D. Unit shall be safety certified by ETL and ETL US listed. Unit nameplate shall include the ETL/ETL Canada label.

1.03 Submittals

- A. Product Data: Literature shall be provided that indicates dimensions, operating and shipping weights, capacities, ratings, fan performance, filter information, factory supplied accessories, electrical characteristics, and connection requirements. Installation, Operation and Maintenance manual with startup requirements shall be provided.
- B. Shop Drawings: Unit drawings shall be provided that indicate assembly, unit dimensions, construction details, clearances, and connection details. Computer generated fan curves for each fan shall be submitted with specific design operation point noted. Wiring diagram shall be provided with details for both power and control systems and differentiate between factory installed and field installed wiring.

1.04 Delivery, Storage, and Handling

- A. Unit shall be wrapped in special heat shrink plastic covering the entire unit for supplemental unit protection to prevent damage during transport and thereafter while in storage awaiting installation.
- B. Unit shall be crated for shipment. Crate shall be fabricated of dimensional lumber and plywood.
- C. Follow Installation, Operation and Maintenance manual instructions for rigging, moving, and unloading the unit at its final location.

- D. Unit shall be handled carefully to avoid damage to components, enclosures and finish.
- E. Unit shall be stored in a clean, dry place protected from construction traffic in accordance with the Installation, Operation and Maintenance manual.

1.05 Warranty

- A. Manufacturer shall provide a limited “parts only” warranty for a period of 12 months from the date of equipment startup or 18 months from the date of original equipment shipment from the factory, whichever is less. Warranty shall cover material and workmanship that prove defective, within the specified warranty period, provided manufacturer’s written instructions for installation, operation and maintenance have been followed. Warranty excludes parts associated with routine maintenance, such as belts and filters.

Part 2 - Products

2.01 Manufacturer

- A. Products shall be provided by the following manufacturers:

- 1. AAON

2.02 Air Handling Units

- A. General Description

- 1. Indoor air handling units shall include filters, supply fans, DX evaporator coil, reheat coil, electric heaters, and unit controls.
- 2. Unit shall have a draw-through supply fan configuration and discharge air vertically.
- 3. Unit shall be factory assembled and tested including leak testing of the DX coil, and run testing of the supply fans and factory wired electrical system. Run test report shall be supplied with the unit.
- 4. Unit shall have decals and tags to indicate lifting and rigging, service areas and caution areas for safety and to assist service personnel.
- 5. Unit components shall be labeled, including pipe stub outs, refrigeration system components and electrical and controls components.
- 6. Installation, Operation and Maintenance manual shall be supplied within the unit.
- 7. Laminated color-coded wiring diagram shall match factory installed wiring and shall be affixed to the interior of the control compartment’s hinged access door.
- 8. Unit nameplate shall be provided in two locations on the unit, affixed to the exterior of the unit and affixed to the interior of the control compartment’s hinged

access door.

B. Construction

1. All cabinet walls, access doors, and roof shall be fabricated of double wall, impact resistant, rigid polyurethane foam panels.
2. Unit insulation shall have a minimum thermal resistance R-value of 6.25. Foam insulation shall have a minimum density of 2 pounds/cubic foot and shall be tested in accordance with ASTM D1929-11 for a minimum flash ignition temperature of 610°F.
3. Unit construction shall be double wall with G90 galvanized steel on both sides and a thermal break. Double wall construction with a thermal break prevents moisture accumulation on the insulation, provides a cleanable interior, prevents heat transfer through the panel, and prevents exterior condensation on the panel.
4. Unit shall be designed to reduce air leakage and infiltration through the cabinet. Sealing shall be included between panels and between access doors and openings to reduce air leakage. Piping and electrical conduit through cabinet panels shall include sealing to reduce air leakage.
5. Access to filters, cooling coil, reheat coil, supply fans, and electrical and controls components shall be through hinged access doors.
6. Access doors shall be flush mounted to cabinetry. Coil access door and supply fan access door shall include quarter-turn lockable handles. Supply fan access door shall include removable pin hinges.
7. Units with a cooling coil shall include sloped 304 stainless steel drain pan. Drain pan connection shall be on the right hand side of unit.
8. Cooling coil shall be mechanically supported above the drain pan by multiple supports that allow drain pan cleaning and coil removal.
9. Unit shall include exterior corrosion protection which shall be capable of withstanding at least 2,500 hours, with no visible corrosive effects, when tested in a salt spray and fog atmosphere in accordance with ASTM B 117-95 test procedure.

C. Electrical

1. Unit shall be provided with an external control panel with separate low voltage control wiring with conduit and high voltage power wiring with conduit between the control panel and the unit. Control panel shall be field mounted.
2. Unit shall include a factory installed 24V control circuit transformer.
3. Unit shall be provided with phase and brown out protection which shuts down all motors in the unit if the electrical phases are more than 10% out of balance on

voltage, the voltage is more than 10% under design voltage or on phase reversal.

4. Unit shall contain dual point power. One circuit will be for the fan and one circuit will be for the electric heat.

D. Supply Fans

1. Unit shall include direct drive, unhooded, backward curved, plenum supply fans.
2. Blower and motor assembly shall be dynamically balanced.
3. Blower and motor assembly shall be mounted on rubber isolators.
4. Motor shall be a high efficiency electronically commutated motor (ECM).

E. Cooling Coil

1. Evaporator Coil
 - a. Coil shall be designed for use with R-410A refrigerant and constructed of copper tubes with aluminum fins mechanically bonded to the tubes and aluminum end casings. Fin design shall be sine wave rippled.
 - b. Coil shall be 6 row high capacity and 12 fins per inch.
 - c. Coil shall be hydrogen or helium leak tested.
 - d. Coil shall be furnished with factory installed thermostatic expansion valves. The sensing bulbs shall be field installed on the suction line immediately outside the cabinet.
 - e. Coil shall have right hand external piping connections. Liquid and suction connections shall be sweat connection. Coil connections shall be labeled, extend beyond the unit casing, and be factory sealed on both the interior and exterior of the unit casing, to minimize air leakage.

F. Refrigeration System

1. Air handling unit and matching condensing unit shall be capable of operation as an R-410A split system air conditioner.
2. Each refrigeration circuit shall be equipped with thermostatic expansion valve type refrigerant flow control.
3. Modulating hot gas reheat shall be provided on the refrigeration circuit. Refrigeration circuit shall be provided with hot gas reheat coil, modulating valves, electronic controller, supply air temperature sensor and a dehumidification mode of operation, which includes supply air temperature control to prevent supply air temperature swings and overcooling of the space. Modulating reheat valves shall be factory installed in the matching AAON condensing unit. Reheat line connections shall be labeled, extend beyond the unit casing and be located near the

suction and liquid line connections for ease of field connection. Connections shall be factory sealed on both the interior and exterior of the unit casing to minimize air leakage.

G. Electric Heating

1. Unit shall include an electric heater consisting of electric heating coils, fuses, and a high temperature limit switch, with capacities as shown on the plans.
2. Electric heating coils shall be located in the reheat position downstream of the supply fan.
3. Electric heater shall have full modulation capacity controlled by an SCR (Silicon Controlled Rectifier). Controller shall provide the heating control signal to control the amount of heating.

H. Filters

1. Unit shall include 4 inch thick, pleated panel filters with an ASHRAE efficiency of 95% and a MERV rating of 14, upstream of the cooling coil. Unit shall also include 2 inch thick, pleated panel pre filters with an ASHRAE efficiency of 30% and MERV rating of 8, upstream of the 4 inch standard filters.
2. Unit shall include a clogged filter switch.
3. Unit shall include factory installed Magnehelic gauge measuring the pressure drop across the filter rack.

I. Controls

1. Unit shall be provided with an external control panel with separate low voltage control wiring with conduit and high voltage power wiring with conduit between the control panel and the unit. Control panel shall be field mounted.
2. Factory Installed and Factory Provided Controller
 - a. Unit controller shall be capable of controlling all features and options of the unit. Controller shall be factory installed in the unit controls compartment and factory tested.
 - b. Controller shall be capable of stand alone operation with unit configuration, setpoint adjustment, sensor status viewing, unit alarm viewing, and occupancy scheduling available without dependence on a building management system.
 - c. Controller shall have an onboard clock and calendar functions that allow for occupancy scheduling.
 - d. Controller shall include non-volatile memory to retain all programmed values without the use of a battery, in the event of a power failure.
 - e. Constant Volume Controller

1. Unit shall modulate cooling with constant airflow to meet space temperature cooling loads.
 2. With modulating hot gas reheat, unit shall modulate cooling and hot gas reheat as efficiently as possible, to meet space humidity loads and prevent supply air temperature swings and overcooling of the space.
 3. Unit shall modulate heating with constant airflow to meet space temperature heating loads. Modulating heating capacity shall modulate based on supply air temperature.
- f. Unit configuration, setpoint adjustment, sensor status viewing, unit alarm viewing, and occupancy scheduling shall be accomplished with connection to interface module with LCD screen and input keypad, interface module with touch screen, or with connection to PC with free configuration software. Controller shall be capable of connection with other factory installed and factory provided unit controllers with individual unit configuration, setpoint adjustment, sensor status viewing, and occupancy scheduling available from a single unit. Connection between unit controllers shall be with a modular cable.

Part 3 - Execution

3.01 Installation, Operation and Maintenance

- A. Installation, Operation and Maintenance manual shall be supplied with the unit.
- B. Installing contractor shall install unit, including field installed components, in accordance with Installation, Operation and Maintenance manual instructions.
- C. Start up and maintenance requirements shall be complied with to ensure safe and correct operation of the unit.

Guide Specifications - Condensing Units CU-1-3 and CU-1-4

Part 1 - General

General Description

- A. This section includes the design, controls and installation requirements for air-cooled condensers / condensing units.

Quality Assurance

- A. Unit shall be certified in accordance with UL Standard 1995/CSA C22.2 No. 236, Safety Standard for Heating and Cooling Equipment.
- B. Unit and refrigeration system shall comply with ASHRAE 15, Safety Standard for Mechanical Refrigeration.
- C. System Seasonal Energy Efficiency Ratio (SEER) shall be equal to or greater than prescribed by ASHRAE 90.1, Energy Efficient Design of New Buildings except Low-Rise Residential Buildings.
- D. Unit shall be safety certified by ETL and be ETL US and ETL Canada listed. Unit nameplate shall include the ETL/ETL Canada label.

Submittals

- A. Product Data: Literature shall be provided that indicates dimensions, operating and shipping weights, capacities, ratings, factory supplied accessories, electrical characteristics, and connection requirements. Installation, Operation and Maintenance manual with startup requirements shall be provided.
- B. Shop Drawings: Unit drawings shall be provided that indicate assembly, unit dimensions, construction details, clearances, and connection details. Wiring diagram shall be provided with details for both power and control systems and differentiate between factory installed and field installed wiring.

Delivery, Storage, and Handling

- A. Follow Installation, Operation and Maintenance manual instructions for rigging, moving, and unloading the unit at its final location.
- B. Unit shall be stored in a clean, dry place protected from construction traffic in accordance with the Installation, Operation and Maintenance manual.

Warranty

- A. Manufacturer shall provide a limited “parts only” warranty for a period of 12 months from the date of equipment startup or 18 months from the date of original equipment shipment from the factory, whichever is less. Warranty shall cover material and workmanship that prove defective, within the specified warranty period, provided

manufacturer's written instructions for installation, operation and maintenance have been followed. Warranty excludes parts associated with routine maintenance and refrigerant.

- B. Compressors shall carry a 5 warranty from date of original equipment shipment from the factory.

Part 2 - Products

Manufacturer

- A. Products shall be provided by the following manufacturers:

- 1. AAON

Condensing Units

- A. General Description

- 1. Condensing unit shall include compressors, air-cooled condenser coils, condenser fans, suction and liquid connection valves, and unit controls.
 - 2. Unit shall be factory assembled and tested including leak testing of the coil and run testing of the completed unit. Run test report shall be supplied with the unit in the controls compartment's literature pocket.
 - 3. Unit shall have decals and tags to indicate lifting and rigging, service areas and caution areas for safety and to assist service personnel.
 - 4. Unit components shall be labeled, including pipe stub outs, refrigeration system components and electrical and controls components.
 - 5. Installation, Operation and Maintenance manual shall be supplied within the unit.
 - 6. Laminated color-coded wiring diagram shall match factory installed wiring and shall be affixed to the interior of the control compartment's access door.
 - 7. Unit nameplate shall be provided in two locations on the unit, affixed to the exterior of the unit and affixed to the interior of the control compartment's access door.

- B. Construction

- 1. Unit shall be completely factory assembled, piped, and wired and shipped in one section.
 - 2. Unit shall be specifically designed for outdoor application.
 - 3. The condenser coil shall be mechanically protected from physical damage by a wire guard covering the full area of the coil.
 - 4. Exterior paint finish shall be capable of withstanding at least 2,500 hours, with no

visible corrosive effects, when tested in a salt spray and fog atmosphere in accordance with ASTM B 117-95 test procedure.

5. Unit shall include a forkliftable base.

C. Electrical

1. Unit shall be provided with standard power block for connecting power to the unit.
2. Control circuit transformer and wiring shall provide 24 VAC control voltage from the line voltage provided to the unit.
3. Unit shall be provided with phase and brown out protection which shuts down all motors in the unit if the electrical phases are more that 10% out of balance on voltage, the voltage is more that 10% under design voltage, or on phase reversal.

D. Refrigeration System

1. Unit shall include a variable capacity scroll compressor on the refrigeration circuit which shall be capable of modulation from 10-100% of its capacity.
2. Each compressor shall be furnished with a crankcase heater.
3. Compressors shall be mounted in an isolated service compartment which can be accessed without affecting unit operation.
4. Compressors shall be isolated from the base pan with the compressor manufacturer's recommended rubber vibration isolators, to reduce any transmission of noise from the compressors into the building area.
5. Each refrigeration circuit shall be equipped with automatic reset low pressure and manual reset high pressure refrigerant safety controls, Schrader type service fittings on both the high pressure and low pressure sides, and service valves for liquid and suction connections. Liquid line filter driers shall be factory provided. Finished field installed refrigerant circuits shall include the low side cooling components, refrigerant, thermal expansion valve, liquid line, insulated hot gas line and insulated suction line.
6. Unit shall include a factory holding charge of R-410A refrigerant and oil.
7. Refrigeration circuit shall be provided with hot gas reheat coil in the matching air handler, modulating valves, electronic controller, supply air temperature sensor and a dehumidification control signal terminal which allow the unit to have a dehumidification mode of operation, which includes supply air temperature control to prevent supply air temperature swings and overcooling of the space.
8. Condensing unit shall be provided with adjustable on/off condenser fan cycling head pressure control and adjustable compressor lockout to allow cooling operation down to 35°F.
9. Units shall be provided with a suction pressure transducer on the refrigeration

circuit.

Condensers

A. Air-Cooled Condenser

1. Condenser fan shall be horizontal discharge, axial flow, direct drive fans.
2. Fan motor shall be weather protected, single phase, direct drive, and open drip proof with inherent overload protection.
3. Coils shall be designed for use with R-410A refrigerant and constructed of copper tubes with aluminum fins mechanically bonded to the tubes and aluminum end casings. Fin design shall be sine wave rippled.
4. Coils shall be designed for a minimum of 10°F of refrigerant sub-cooling.
5. Coils shall be hydrogen or helium leak tested.

Controls

A. Standard Terminal Block

1. Unit shall be provided with a terminal block for field installation of controls.

Part 3 - Execution

Installation, Operation, and Maintenance

- A. Installation, Operation and Maintenance manual shall be supplied with the unit.
- B. Installing contractor shall install unit, including field installed components, in accordance with Installation, Operation and Maintenance manual instructions.
- C. Start up and maintenance requirements shall be complied with to ensure safe and correct operation of the unit.

Performance



Split System Rating

2425 South Yukon Ave - Tulsa, Oklahoma 74107-2728 - Ph. (918) 583-2266 Fax (918) 583-6094
AAONEcat32 Ver. 4.226 (SN: 6354480-C6MRRYWC)

1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14A 14B 15 16 17 18 19 20 21 22 23

V3-BRB-9-0-161C-3BS:AACB-HBA-000-0J0-C0A0AC0-00-C0000F00X

Air Handling Unit Tag: FCU-1-3, FCU-1-4

C C - C - 0 0 4 - 9 - D - 1 : D D D 0 E A 0

Condensing Unit Tag: CU-1-3, CU-1-4

Job Information

Job Name: Northside Cosmetic Surgery
Job Number: 31615 - submit
Site Altitude: 0 ft
Refrigerant: R-410A

Static Pressure

External: 1.00 in. wg.
Evaporator: 0.31 in. wg.
Filters Clean: 0.31 in. wg.
Dirt Allowance: 0.5 in. wg.

Cooling Section

	Gross	Net
Total Capacity:	43.16	41.13 MBH
Sensible Capacity:	30.64	28.61 MBH
Latent Capacity:	12.52 MBH	
HW Total Cooling Capacity:	0.21 MBH	
Mixed Air Temp:	75.05 °F DB	62.70 °F WB
Entering Air Temp:	75.05 °F DB	62.70 °F WB
Lv Air Temp (Coil):	46.97 °F DB	46.77 °F WB
Lv Air Temp (Unit)	48.73 °F DB	47.59 °F WB
Evap Suction Temp:	39.91 °F	
Supply Air Fan:	1 x 310AX @ 0.68 BHP	
SA Fan RPM / Width:	2083 / 5.790"	
Evaporator Coil:	3.7 ft ² / 6 Rows / 12 FPI	
Evaporator Face Velocity:	276.8 fpm	

EER - ARI Listing Information

Application EER @ Op. Conditions: 10.4

AH Electrical Data

Rating: 208/1/60

CU Electrical Data

Rating: 208/1/60
Unit FLA: 25

	Qty	HP	VAC	Phase	RPM	FLA	RLA
Compressor 1:	1		208	1			20.2
Condenser Fans:	1	0.50	208	1	1075	4.4	
Supply Fan:	1	2.10	208	1	2580	6.4	

*Motor heat is not included.

Unit Information

****WEIGHT AND PERFORMANCE DO NOT INCLUDE SPA**

Approx. Weights AHU/CU: 659 / 260 lbs. (±5%)**
Supply CFM/ESP: 1015 / 1 in. wg.
Ambient Temperature: 95 °F DB / 75 °F WB
Return Temperature: 70 °F DB / 59 °F WB

Economizer:
Heating: 0.03 in. wg.
Cabinet:
Total: 2.15 in. wg.

Heating Section

Auxiliary Heating Type*:	Electric Heat
Heating CFM:	1015
Total Capacity:	35.8 MBH
Entering Air Temp:	70.0 °F DB / 60.0 °F WB
Leaving Air Temp:	102.7 °F DB / 70.7 °F WB
Input:	10.5 kW
Heater Qty (Hi/Low):	2
Electric Heat FLA:	50

Re-Heat Coil:

Capacity: 23 MBH
LA DB / WB: 68.00 °F / 55.83 °F
RH: 46%

Condensing Unit EER @ Op. Conditions: 12.9

Minimum Circuit Amp: 7 (circuit 1), 63 (circuit 2)
Maximum Overcurrent: 15 (circuit 1), 70 (circuit 2)

Minimum Circuit Amp: 30
Maximum Overcurrent: 45



12" EBM Plenum

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AAONEcat32 Ver. 4.226 (SN: 6354480-C6MRRYWC)

JOB INFORMATION:

Job Name: Northside Cosmetic Surgery
Job Tag: FCU-1-3, FCU-1-4
Rep Firm:
Date: 03/17/2015

WHEEL SPECIFICATION:

Max RPM: 2,580
Diameter x Qty: 12.5 in. x 1
CFM: 1015
Tip Speed: 6,806 FPM
Inertia: 3 WR²

OPERATING CONDITIONS:

Air Flow: 1,015 CFM
Static Pressure: 2.15 in. Wg.
Relief Dampers DP: 0.00 in. Wg.

TSP: 2.15 in. Wg.
Site Altitude: 0.00 Ft
TSP @ Sea Level: 2.15 in. Wg.

MOTOR SELECTION:

Rated HP / Bypass: 2.1 / No
Frame Size: ECM
Nominal RPM: 2580
VAC/PH/Hz: 208/1/60
Efficiency: Premium / 0.855
Enclosure Type: ODP
Max Inertial Load: 27 WR²

FAN PERFORMANCE:

RPM: 2083
BHP: 0.68
Efficiency: 50.6%
In/Out Velocity: 883/923 FPM
Plenum Out Velocity: 11 FPM

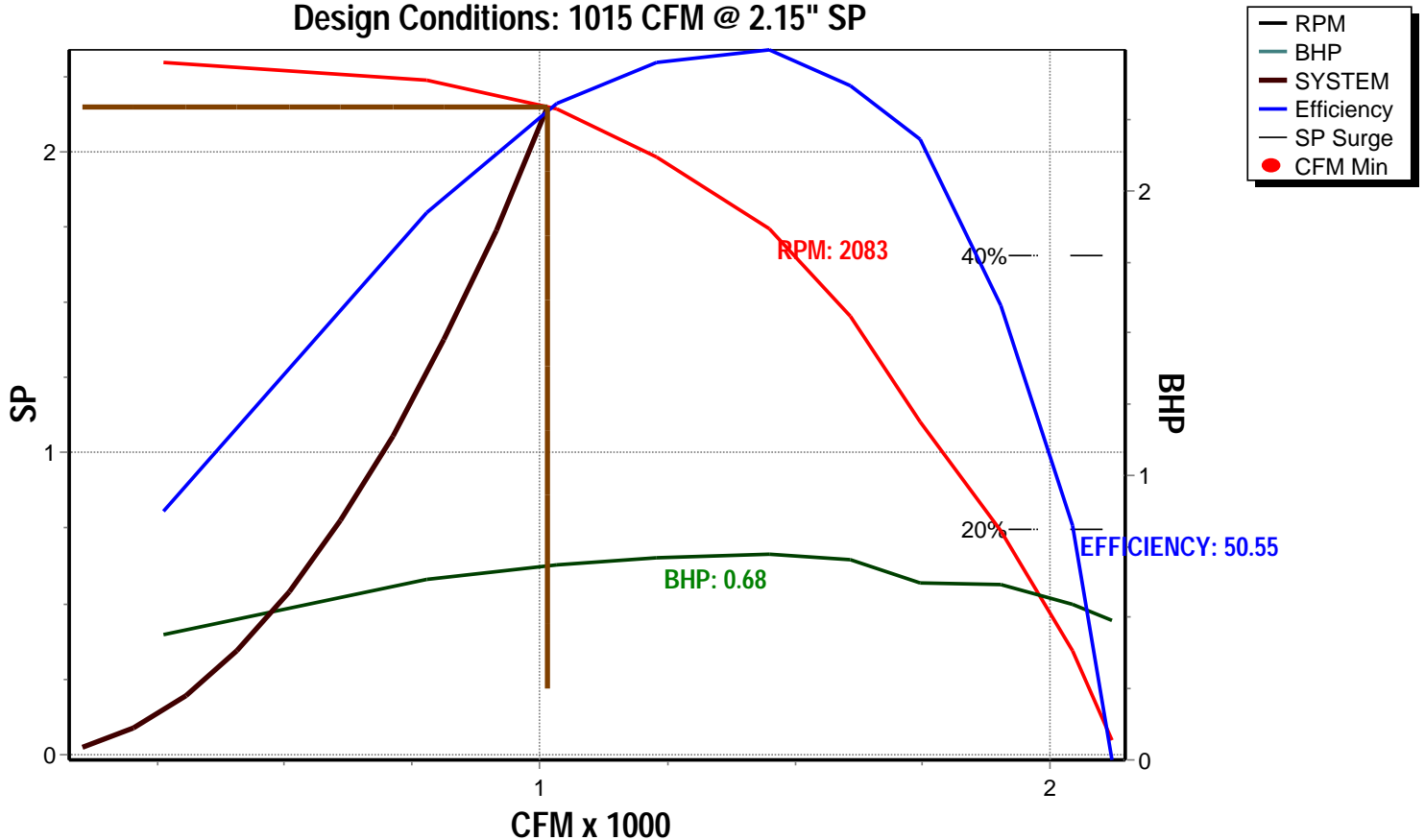
FAN SOUND POWER (Inlet/Outlet):

Octave Band:		(Re 10 ⁻¹² watts)							
1	2	3	4	5	6	7	8		
63	68	75	68	65	65	62	59		
67	70	77	73	74	72	68	64		

SOUND POWER A-Weighted: 71 / 77 dB

Max Duct SP with Blocked Airway: 2.3 in. Wg. @ 2083 rpm

Supply Fan Model: 310AX @ 2083 RPM and 100% Width
Design Conditions: 1015 CFM @ 2.15" SP



Selected Options



Unit Submittal

203 Gum Springs Road - Longview, TX 75602 - Ph. (903) 236-4403 Fax (903) 236-4463
AAONEcat32 Ver. 4.226 (SN: 6354480-C6MRRYWC)

1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14A 14B 15 16 17 18 19 20 21 22 23

V3-BRB-9-0-161C-3BS: AACB-HBA-000-0J0-C0A0AC0-00-C0000F00X

Tag: FCU-1-3, FCU-1-4

Job Name:
Job Number:

Northside Cosmetic Surgery
31615 - submit

Unit Submittal For:
Unit Submittal Date:

Paulson-Cheek Mechanical
March 16, 2015

	Base Option	Description
V	Series	Vertical Unit
3	Generation	Third Generation
B	Unit Size	Up to 2,000 cfm
R	Unit Orientation	Right Hand Connections - Top Discharge, Back Intake (Vertical)
B	Revision	Second Revision
9	Voltage	208V/1Ø/60Hz
0	Corrosion Protection	None
1	Cooling Type	R-410A DX Cooling
6	Cooling Rows	6 Row Coil
1	Cooling Stages	Single Circuit
C	Cooling FPI	12 fpi
3	Heating Type	Electric Heat
B	Heating Designation	14 kW (10.5 kW @ 208V)
S	Heating Stages	Modulating/SCR Electric

	Feature Option	Description
A	1A. SA Blower Configuration	1 Blower + 1 High Efficiency EC Motor
A	1B. SA Blower Model	310 mm Backward Curved Plenum
C	1C. SA Blower Motor	1.7 kW
B	1D. SA Blower Control/Control Vendor	WattMaster Orion Controls System
H	2. Refrigeration Options	Modulating Hot Gas Reheat (MHGR)
B	3. Special Controls	Constant Volume Controller + Modulating Hot Gas Reheat - CV Cool + CV Heat
A	4. Additional Controls	Phase and Brownout Protection
0	5A. Mixing Box - RA Damper Position	Standard - None
0	5B. Mixing Box - OA Damper Position	Standard - None
0	5C. Mixing Box - Damper Control	Standard - None
0	6A. Filter Box - Pre Filter Box	Standard - None
J	6B. Filter Box - Unit Filter	2" Pleated - 30% Eff. + 4" Pleated - 95% Eff. - MERV 14
0	6C. Filter Box - Final Filter Box	Standard - None
C	7. Filter Options	Magnehelic Gauge + Clogged Filter Switch
0	8. Coil Coating	Standard - None
A	9. Expansion Valve	Thermal Expansion Valves
0	10. Expansion Valve Controls	None
A	11. External Paint	AAON Gray Paint
C	12. Tonnage	4 ton Capacity
0	13. Added or Modified Systems	Standard - None
0	14A. GPM Cooling Coil	Standard
0	14B. GPM Heating Coil	Standard
C	15. Control Panel	Large Control Panel - 48" x 22"
0	16. Cabinet	Standard
0	17. Blank	Standard - None
0	18. Preheat	Standard - None
0	19. Blank	Standard - None
F	20. Crating	Forkliftable Base + Shipping Shrink Wrap
0	21. Pulley Combination	Standard - None
0	22. Warranty	Standard - 1 Year Parts
X	23. Type	Special Pricing Authorization



C C - C - 0 0 4 - 9 - D - 1 : D D D 0 E A 0

Tag: CU-1-3, CU-1-4

Job Name: Northside Cosmetic Surgery
Job Number: 31615 - submit

Unit Submittal For: Paulson-Cheek Mechanical
Unit Submittal Date: March 16, 2015

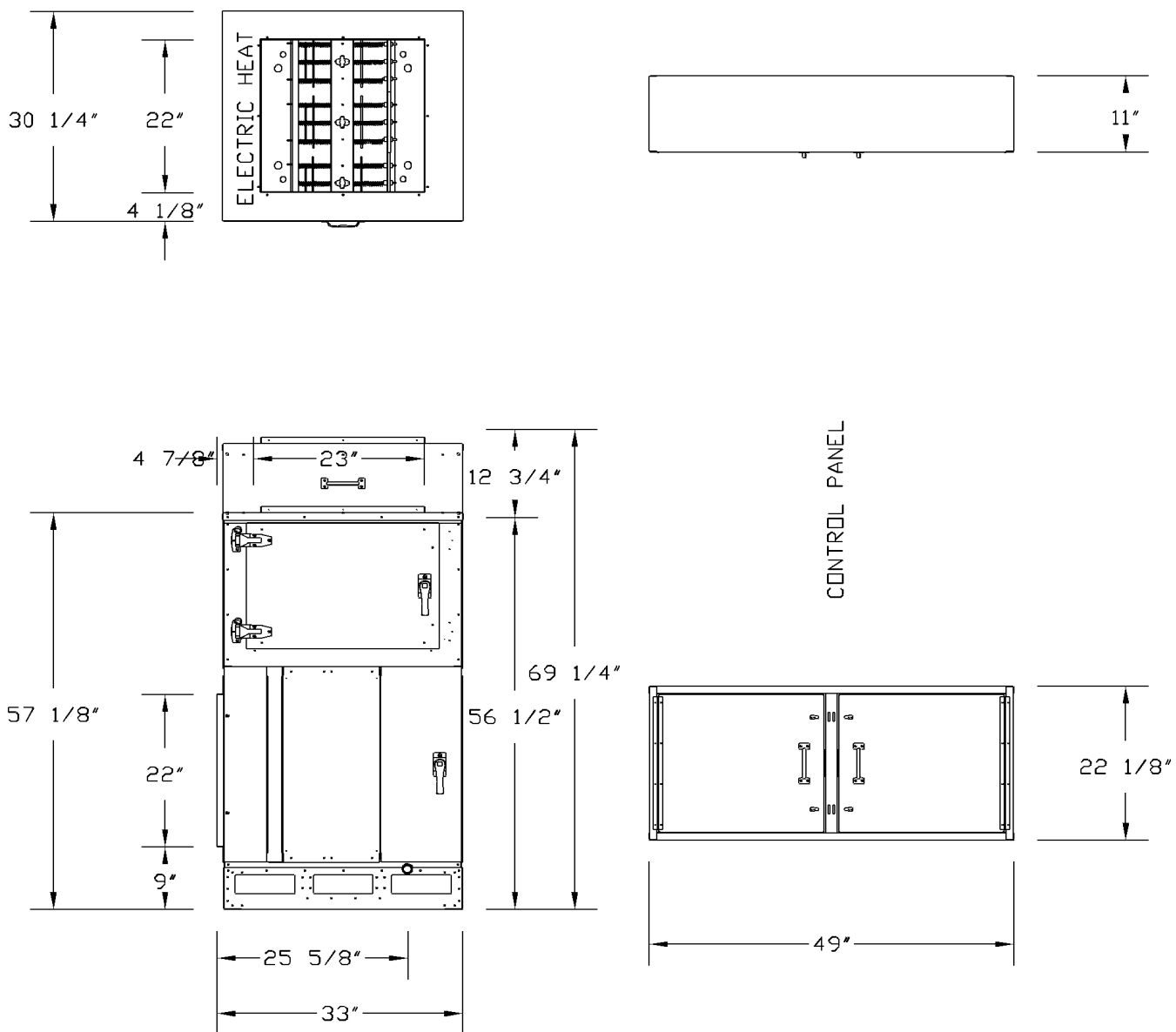
	Base Option	Description
C	Series	Condensing Unit
C	Generation	3rd Generation
C	Revision	Third Revision
004	Unit Size	Four Tons - Horizontal Discharge
9	Voltage	208V/1Ø/60Hz
D	Compressors	Variable Capacity Scroll Compressor – Lead Circuit
1	Circuits	One Circuit

	Feature Option	Description
D	1 Ambient Control	Modulating Fan Pressure Control (35°F Ambient)
D	2 Refrigeration Option	Modulating Hot Gas Reheat
D	3 Control	Suction Pressure Transducer + Phase and Brown Out Protection
0	4 Coil	Standard - Copper tube coil with aluminum fins
E	5 Cabinet	Compressor Sound Blanket + 2,500 Hour Salt-Spray Tested Exterior Paint
A	6 Warranty	Second To Fifth Year Extended Compressor Warranty
0	7 Type	Standard

Drawings

THE EXTERNAL CONTROL PANEL SHOWN ON THIS DRAWING
IS WIRED TO THE AIR HANDLER UNIT USING 6 FT LONG
WATER-TIGHT CONDUITS.

APPROXIMATE CONTROL PANEL WEIGHT: 160 Lbs.



AIRFLOW DIRECTION



Longview, Texas

Configurator V3-BRB-9-0-161C-3BS:AACB-HBA-000-0J0-C0A0AC0-00-C0000F00X
JOB NAME: Northside Cosmetic Surgery

PURCHASER:

PURCHASE ORDER:

Rep Contact:

Ordered By:

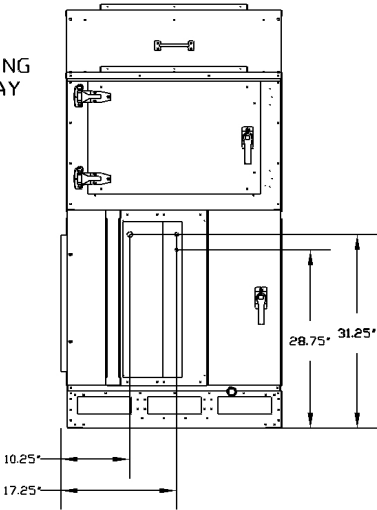
SERIAL NO.:
v1.10.0.0

DATE:
3/17/2015

Engineer:

UNIT TAG:
FCU-1-3, FCU-1-4

CONNECTION LOCATIONS SHOWN ON THIS DRAWING
ARE APPROXIMATE. THE ACTUAL LOCATIONS MAY
SHIFT SLIGHTLY DURING MANUFACTURING.



Longview, Texas

Configurator V3-BRB-9-0-161C-3BS:ACB-HBA-000-0J0-C0A0AC0-00-C0000F00X
JOB NAME: Northside Cosmetic Surgery

PURCHASER:

PURCHASE ORDER:

Rep Contact:

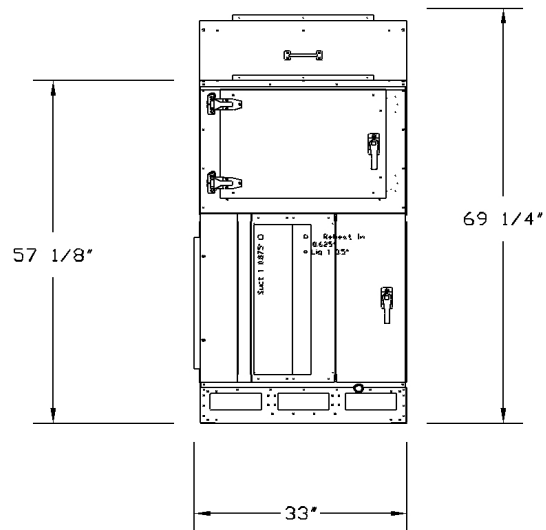
Ordered By:

Engineer:

UNIT TAG:
FCU-1-3, FCU-1-4

SERIAL NO.:
v1.10.0.0

DATE:
3/17/2015



AIRFLOW DIRECTION



Longview, Texas

Configurator V3-BRB-9-0-161C-3BS:AACB-HBA-000-0J0-C0A0AC0-00-C0000F00X

JOB NAME: Northside Cosmetic Surgery

PURCHASER:

PURCHASE ORDER:

Rep Contact:

Ordered By:

SERIAL NO.:

v1.10.0.0

DATE:

3/17/2015

Engineer:

UNIT TAG:

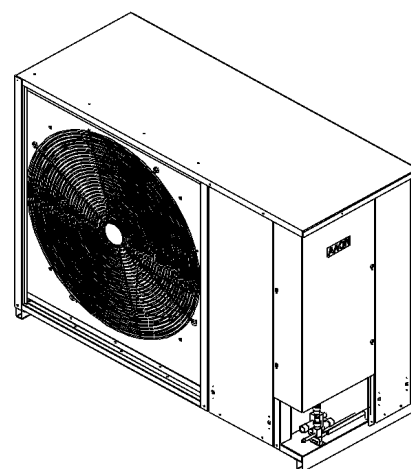
FCU-1-3, FCU-1-4

UNIT INFO

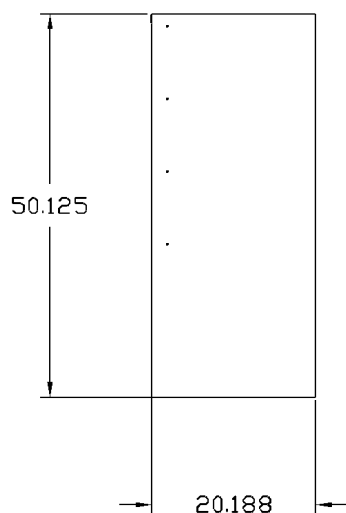
	CC-004	CC-005
COMPRESSORS		
QUANTITY/NOMINAL TONS		
R-410A TWO STEP SCROLL	1/4 TWO STEP	1/5 TWO STEP
R-410A VARIABLE CAPACITY SCROLL	1/4 VAR.	1/5 VAR.
NUMBER OF CIRCUITS	1	
CONDENSER FANS:		
QUANTITY/DIAMETER	1/26"	
hp	1/2	
LIQUID LINE CONNECTIONS	1/2"	
SUCTION LINE CONNECTIONS	7/8"	
HOT GAS LINE CONNECTIONS	1/2"	
DISCHARGE LINE CONNECTIONS	1/2"	5/8"
NOMINAL UNIT WEIGHT(LBS.)	260	281

CLEARANCE

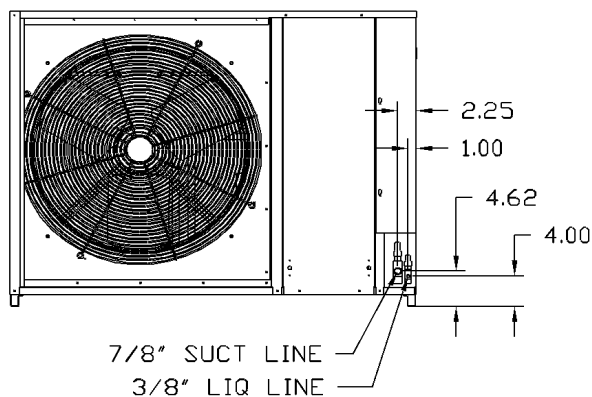
LOCATION	CC 4-5 TON
BACK	36"
FRONT	UNOBSTRUCTED
LEFT SIDE	10"
RIGHT SIDE	36"
TOP	36"



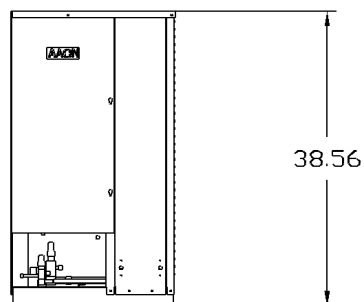
RIGHT SIDE



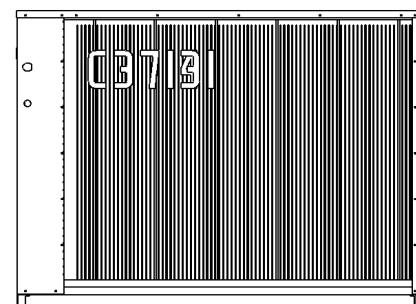
TOP



FRONT



RIGHT SIDE



BACK

Field Piping



Refrigeration Accessories

2425 South Yukon Ave - Tulsa, Oklahoma 74107-2728 - Ph. (918) 583-2266 Fax (918) 583-6094
AAONEcat32 Ver. 4.226 (SN: 6354480-C6MRRYWC)

1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14A 14B 15 16 17 18 19 20 21 22 23

V3-BRB-9-0-161C-3BS: AACB-HBA-000-0J0-C0A0AC0-00-C0000F00X

Air Handling Unit Tag: FCU-1-3, FCU-1-4

C C - C - 0 0 4 - 9 - D - 1 : D D D 0 E A 0

Condensing Unit Tag: CU-1-3, CU-1-4

Job Information

Job Name: Northside Cosmetic Surgery Job Number: 31615 - submit

Factory Supplied / Factory Installed

Quantity	Description	Part #:	Location
1	Reversible Thermal Expansion Valve, CBBIZE-5	29576	AHU
2	Modulating Refrigerant Valve, SDR-3	28387	CU

Factory Supplied / Field Installed

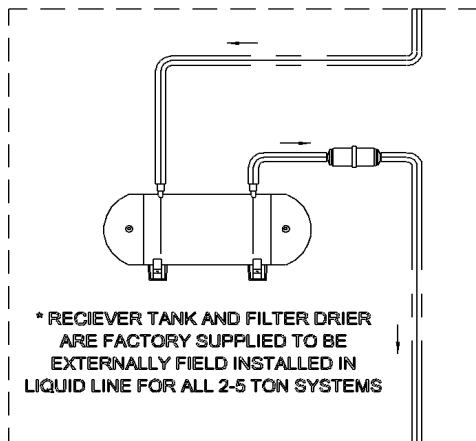
Quantity	Description	Part #:	Location
1	Receiver, 4 lb.	29062	CU
1	Filter Drier	29901	CU

Field Supplied / Field Installed

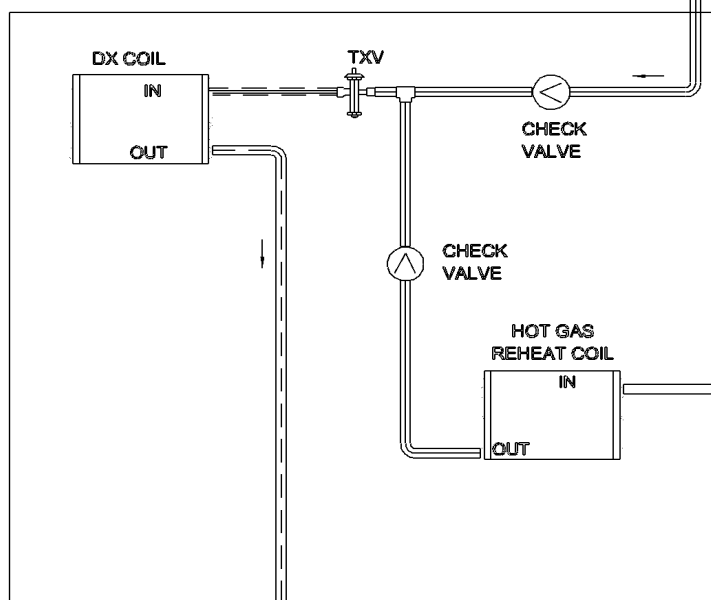
Quantity	Description	Part #:	Location
-	P-Trap(s)		AHU

- ▲ SHUTOFF VALVE
 --- DISCHARGE LINE
 === LIQUID LINE
 --- SUCTON LINE
 --- HOT GAS LINE

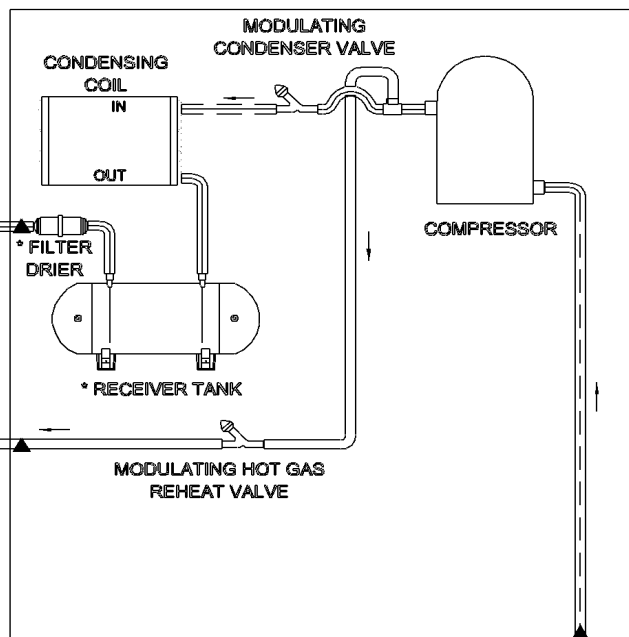
DETAIL B



AIR HANDLING UNIT



CONDENSING UNIT



SEE DETAIL B

LIQUID LINE

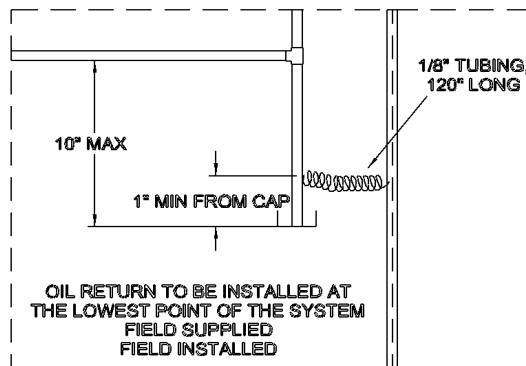
HOT GAS REHEAT LINE

SUCTON LINE

INSTALL SUCTION LINE OIL TRAPS EVERY 10' OF VERTICAL RISE, OR AS DETAILED IN JOB SUBMITTAL FIELD SUPPLIED FIELD INSTALLED

OPTIONAL SUCTION LINE ACCUMULATOR FIELD SUPPLIED FIELD INSTALLED

DETAIL A



REV	BY	ECN NUMBER	DATE

MATERIAL:

TOLERANCES

FRAC.:
 +/- 1/32 ± 48 INCHES
 +/- 1/16 > 48 INCHES

DEC.:
 +/- .03 ± 48 INCHES
 +/- .06 > 48 INCHES

ANG.: +/- 1°

UNLESS OTHERWISE SPECIFIED

DRAWN BY:

CKD BY:

APPD BY:

2425 S. YUKON

TULSA, OKLAHOMA

AAON INC.
 PIPING SCHEMATIC DIAGRAM
 AC W/ HOT GAS REHEAT
 SUCTION UP FLOW

Circuit #: 1

SHEET /

DATE

DRAWING NUMBER

ACRH - SU

REV

Controls



VCMX Components

2425 South Yukon Ave - Tulsa, Oklahoma 74107-2728 - Ph. (918) 583-2266 Fax (918) 583-6094
AAONEcat32 Ver. 4.226 (SN: 6354480-C6MRRYWC)

1A 1B 1C 1D 2 3 4 5A 5B 5C 6A 6B 6C 7 8 9 10 11 12 13 14A 14B 15 16 17 18 19 20 21 22 23

V3-BRB-9-0-161C-3BS: AACB-HBA-000-0J0-C0A0AC0-00-C0000F00X

Tag: FCU-1-3, FCU-1-4

Job Name: *Northside Cosmetic* VCMX For: *Paulson-Cheek Mechanical*

Surgery

Job Number: *31615 - submit* VCMX Date: *March 16, 2015*

Hardware Included For VCMX Controller

Part #	Included Parts	Assigned Channel
31422	VCMX Controller with E-Bus	
28606	Space Temp Sensor - Field Installed	MainController\AI1
28503	Supply Air Temp Sensor - Field Installed	MainController\AI2
28503	Return Air Temp Sensor	MainController\AI3
28505	Outside Air Temp Sensor	MainController\AI4
30308	VCMX Large Expansion Module	
28626	Dirty Filter Sensor	LargeExpansionModule\BI2
29644	Space Humidity Sensor - Field Installed	LargeExpansionModule\AI2
30126	Suction Pressure Transducer (Installed in Condensing Unit)	LargeExpansionModule\AI3

		1	2	3	4	5	6	7
VCMX Controller with E-Bus	Analog In	X	X	X	X	X		X
	Analog Out		X					
	Binary In							
	Relay Out	X	X					
	Digital Sensor(s)							

		1	2	3	4	5	6	7	8
VCMX Large Expansion Module	Analog In		X	X					
	Analog Out		X	X					
	Binary In		X						
	Relay Out								



Control Terminals

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AAONEcat32 Ver. 4.226 (SN: 6354480-C6MRRYWC)

C C - C - 0 0 4 - 9 - D - 1 : D D D 0 E A 0

Condensing Unit Tag: CU-1-3, CU-1-4

Job Information

Job Name: Northside Cosmetic Surgery Job Number: 31615 - submit

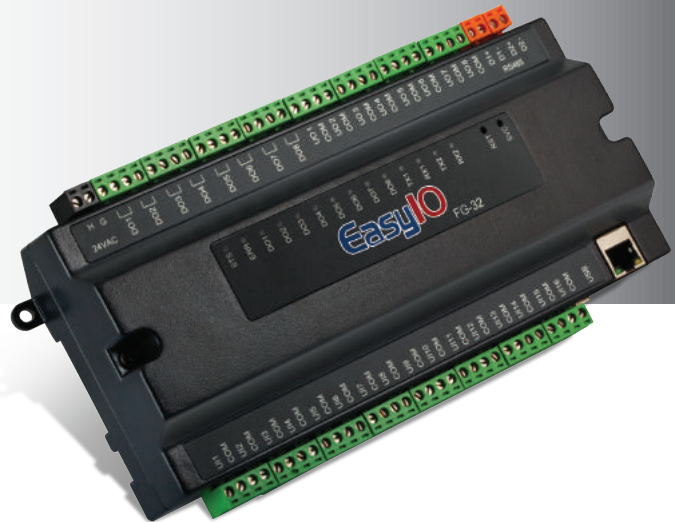
Terminals Available/Required for Controlling the Unit

Terminal Point	Description
[R]	24VAC Control Voltage
[C]	Common
[Y1]	Cooling Stage 1 Enable
[CC1-] & [CS1+]	Variable Capacity Compressor (0-5 VDC) Signal
[P5-] & [P6+]	Suction Pressure Sensor - Compressor 1 (0-5 VDC)
[G/R], [R/G], [W] & [B]	SDR VALVE

FG-32

DDC Energy Controller, Internet and Cloud Ready

- ❖ ARM 9 S3C2410 200MHz Main Processor
- ❖ M3 Cortex Processor for the I/O
- ❖ 16 Mbyte NOR Flash
- ❖ 64 Mbyte SDRAM
- ❖ SD Card Reader for Histories and Graphics
- ❖ 1 x 10/100 Ethernet Port
- ❖ 1 x Mini USB
- ❖ 2 x RS485
- ❖ RTC
- ❖ SuperCap Apps Safety Backup
- ❖ 24V AC/DC Power
- ❖ 16 x UI
- ❖ 8 x DO/LED for Status
- ❖ 8 x UO (200mA sink for Switching Relays)
- ❖ Remote Flash Upgrades
- ❖ HTML5 Web Server on Board!



The new FG series of Open Automation Controllers from EasyIO are the new range of Internet ready Field Controllers. They comprise of combined Area Controller capabilities and features, as well built in I/O, and huge data logging capacity, all packaged as the future solution for the Internet of things, in Energy and Building Facility Control. The Controller also supports multi concurrent protocols and services such as BACnet, Modbus, TCOM, Web Services, and both Server and Client services.

This new range complies with the 'Internet of Things' by interfacing directly to Cloud Services, without an additional Gateway, or Server. To power the application, The FG has a dual ARM processor engine, and also a built-in Web Server.

The FG series change the way that we will deploy Building Automation, especially in multiple Facilities and locations, whereby, a starter package can be deployed quickly, and cost effectively, without any additional hardware or middleware. We see this range of FG Controllers allowing us and the industry to extend their reach deeper and wider into all kinds of Energy Performance Solutions. Ranging from Retail Stores, Schools, and Residential, Smart Grid and so on.

Another exciting feature, is the openness, and its web friendly tools to enable 3rd Party Tools to be deployed in addition to the Workbench that we are all familiar with today. This platform will meet the needs of simple controls requirements and complex HVAC plants, such as Chiller Sequencing and Roof Top Control. Truly a welcome change!

Graphics will also be served from the FG Engine, nicely embedded in the Linux OS. To compliment this there will be third party Graphics Tools that will be used to design and implement Graphic Screens, the content being stored in the built-in micro SD Card slot (up to 16GB).

Features

- ❖ Power! - TWO ARM processors
- ❖ Memory/Storage - SD Card and massive history storage
- ❖ Supports BACnet, TCOM, Modbus and Web Services
- ❖ Fills a Gap in the market, between an Area Controller and the EasyIO 30P controller
- ❖ HTML5 Graphics! - IPAD friendly

Specifications

- ❖ ARM 9 S3C2410 200MHz Main Processor
- ❖ M3 Cortex Processor for the I/O
- ❖ 16 Mbyte NOR Flash
- ❖ 64 Mbyte SDRAM
- ❖ SD Card Reader
- ❖ 1 x 10/100 Ethernet Port
- ❖ 1 x Mini USB
- ❖ 2 x RS485
- ❖ RTC
- ❖ SuperCap Apps Backup
- ❖ 24V AC/DC Power

Device Info

Model	EasyIO-FG-32
Description	EasyIO-FG32 Sedona series: 32 I/O Controller
Name	FG32 DDC

Device Specifications

Mechanical	Dimensions	9.2 in x 4.9 in x 1.7 in (233 mm x 124 mm x 44 mm)
	Material	UL Approved Plastic
	Weight	800gram
Electrical	Power Supply	24V AC +/- 5% or 24V DC +20%/-15%
	Consumption	18VA
	Current Rating	750mA at 24VAC/VDC
	Operating Temp	32 to 150°F (0 to 65°C)
	Storage Temp	-4 to 150°F (-20 to 65°C)
	Operating Humidity	10% to 95% relative humidity non-condensing
Inputs & Outputs	UO: 3 modes. Voltage mode, output range: 0-10V; Current mode, output range: 0-20mA; Digital mode, maximum sinking current: 200mA DC only at 200mA max.	
	UI: 5 modes: Digital mode, voltage free contact input, Resistance mode, input range: 500-500Kohm; Voltage mode, input range: 0-10V; Current mode, input range: 0-20mA; Pulse count mode, maximum pulse frequency: 20Hz	
	DO: Relay output with contact rating 1A 30VDC	

Communication

Physical Interface 1 & 2 (Port 1 & 2)	EIA-485 (BUS A, B) Two-wire, Half Duplex
Modbus Baud Rate	Speed: (9.6K, 19.2k, 38.4K, 57.6K, 115.2K bit/s), Data Bit: (8 bits), Parity: (None, Even, Odd)
Bacnet Baud Rate	Speed: (9.6K, 19.2k, 38.4K, 76.8K), Data Bit: (8 bits), Parity: (None)
Ethernet Support	IP, TCP, UDP, ICMP, HTTP, FTP
Application Support	Sox, TCOM driver, Modbus, BACnet

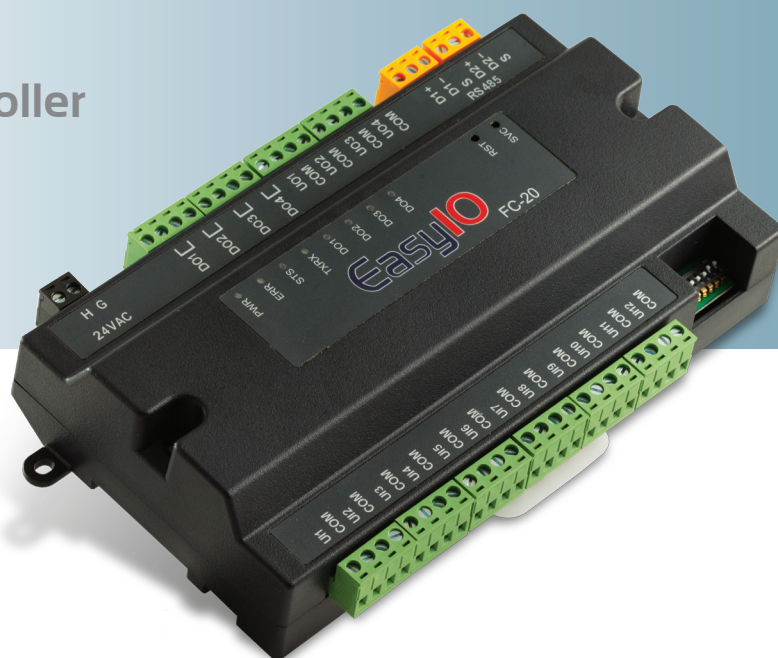
EasyIO Holdings Pte Ltd
www.EasyIO.com



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FC-20

The EasyIO FC Series FC 20 Standalone Controller



The EasyIO FC series is aimed at affordable 'canned' solutions for standalone applications, such as Roof Top Units, Fan Coils, AHU's, package units etc.

The FC20 is the first product in the FC range, designed to complement the 30P and FG series of awarding winning excellence. All of the FC series products are equipped with two RS485 ports and no Ethernet port, for Ethernet applications you can upscale to the 30P or FG series. All FC products are BACnet and Modbus Selectable and can be programmed via the CPT Tool from Online Tools Inc.

The FC 20 has 20 points of I/O and priced to meet most high volume applications and price points. The new FC-20 is a microprocessor based controller consisting of 20 inputs/outputs (I/O) to accommodate general and specific applications featuring BACnet MSTP and Modbus RTU communication protocols. 20 IOs include, 12 Universal Inputs (UI) supporting current, voltage and resistance based sensor, 4 electrically isolated Digital Outputs (DO) and 4 Analog Inputs supporting current and voltage outputs.

The FC-20 comes with one standard RS485 driver to support either BACnet MSTP or Modbus RTU communication (selection via hardware dip-switch). This communication port is also used as configuration/setting and firmware upgrade.

The concept behind the FC series is that the FC-20 is configured can be used as an input/output controller only, or an Application Specific Application Controller. There is also a Real-time clock and a second RS485 (reserved for communicating with other Modbus devices such as Power Meters) are provided for such application.

Specifications

Model	EasyIO-FC-20
CPU	ARM Cortex-M3, 24MHz
Name	FC 20

Device Specifications

Mechanical	Dimensions	215 mm (L) x 125 mm (W) x 45 mm (H)	
	Weight	410gram	
Electrical	Power Supply	24VAC 50/60Hz $\pm 5\%$, or 20VDC~34VDC	
	Consumption	<11VA	
	Current Rating	500mA at 24VAC/VDC	
	Operating Temp	0°C to 65°C (32° to 149°F)	
	Storage Temp	-20°C to 85°C (-4° to 185°F)	
	Operating Humidity	10% to 95% Relative Humidity, Non-condensing	
Input/Output	Universal Input	12 Channels, 12-Bit ADC (with PGA)	
		Voltage	0~10V ($\pm 0.01V$)
		Current	4~20V ($\pm 0.01mA$)
		Resistance	0~30K (± 50 Ohm), 0~10K (± 5 Ohm) 0~1K (± 1 Ohm)
		Thermistor Sensor	NTC 10K Type 2/3, 3K, 20K ($\pm 0.1^\circ C$) RTD: 1K Balco, 1K Platinum ($\pm 0.2^\circ C$)
	Digital Output	4 Channels	
		Type	Relay, SPST NO, 24Vac/Vdc, 2A
	Analog Output	4 Channels, 12-bit DAC	
		Voltage	0~10V
		Current	4~20mA

Communication

Physical Interface 1 (Port 1)	EIA-485 Two Wire, Half Duplex	
	Modbus Baud Rate	Speed: 9.6K, 19.2K, 38.4K, 57.6K, 115.2K bit/s Data Bit: 8 bits, Parity: None, Even, Odd
	Bacnet Baud Rate	Speed: 9.6K, 19.2K, 38.4K, 57.6K, 76.8K bit/s Data Bit: 8 bits, Parity: None
	Protocol	Modbus RTU, BACnet MSTP
Physical Interface 2 (Port 2)	EIA-485 Two Wire, Half Duplex	
	Modbus Baud Rate	Speed: 9.6K, 19.2K, 38.4K, 57.6K, 115.2K bit/s Data Bit: 8 bits, Parity: None, Even, Odd
	Protocol	Modbus RTU (for Application Specific Application only)

FG-LCD-MMI

For EasyIO, Sedona, JACE's
and Supervisors



Description

The FG-LCD-MMI is a smart and cost effective human machine interface, HMI LCD approach to display real time status information and modify points value on building control system in addition to conventional Niagara AX system. The LCD is a touch screen display which provides ease of usage for different users. It works in latest Sedona Framework™ and interfaces seamless with all Sedona-based devices and makes information accessible from all systems connected to these devices.

Features

- ❖ Touch screen with sharp colour display
- ❖ Sedona Framework™ support
- ❖ Communicates with all Sedona devices, with EasyIOFGLcd kit
- ❖ View and edit points
- ❖ Supports multiple data types e.g. Boolean, integer, float
- ❖ Ethernet based
- ❖ Simple configuration/setup on both Sedona devices and LCD display
- ❖ Easy Firmware upgrade
- ❖ Real time data upgrade
- ❖ Small form factor
- ❖ Accessible up to 600 points per controller
- ❖ Access to multiple controller
- ❖ Cost effective upgrade in project phase
- ❖ Minimum effort for system transfer from existing EasyIO product
- ❖ Simplified control of maintenance/facility team
- ❖ Watchdog governed to prevent system abnormality
- ❖ Simple and clean GUI

Technical Specifications

Power Supply	24 VAC/VDC
Power Consumption	24VA
Current Rating	1A at 24VAC/VDC
Communication Port	Ethernet 10/100 Base-T
Processor	ARM Cortex M3 72MHz
SD Card Support	SDSC/SDHC (Card Support for Firmware Upgrades)
LCD Resolution	320 X 240
LCD Colour Depth	RGB (565)
Buzzer	Built-in
Touch Screen	Resistive 3.5"
USB Port	Mini USB (for future upgrades)
Operating Temp	0..+50°C, max 95%rh non-condensing
Storage Temp	-20..+65°C
Operating Humidity	10..95% rH non-condensing
Enclosure	IP40 (Panel Door)
CE Approval	EN61000-6-3: 2001 (Emissions)
	EN61000-6-2: 2001 (Immunity)
Mounting	Panel Mounting
Terminals	High quality spring-cage terminal blocks
Dimensions	5.3 in x 4.9 in x 1.9 in (135 mm x 125 mm x 48.8 mm)
	Cut-Out: 4.6 in x 3.9 in (118 mm x 98 mm)

Flexibility and Simplicity at Its Best

The FG-LCD can interface with up to 18 devices at any point in time. A device can be an EasyIO Sedona Controller, JACE or AX Supervisor.

The Sedona devices must have the easyioFGLcd kit installed inside its Sedona platform in order to it to communicate with the LCD display. For a JACE or Supervisor, you need to install the easyioLcd.jar in the modules directory in the JACE or Supervisor.

The cable that is suitable to use to connect from FG-LCD to the devices is the CAT5 cable (straight) with the RJ45 connectors and for the power, a normal power cable will be used.



Automation Components, Inc.

THERMISTOR

General Mounting

Quick snap
latch

Double encapsulation
process for all probe
related sensors

Hinged cover
(no screws)

Product shown: ACI's Plastic Box



CE exception: Averaging units and any other configuration with leads longer than 3 meters.

CONFIGURATION

Part #	Configuration
(D)	Duct
(DO)	Duct w/o box
(I)	Immersion w/ two piece well
(IM)	Immersion w/ machined well
(INW)	Immersion w/o well
(A)	Copper Averaging
(FA)	Flex. Cable Averaging
(RA)	Rigid Averaging
(S)	Strap
(O)	Outdoor Air
(W)	Raw Potted Sensor
(W-6')	Raw w/6' Leads
(BP)	Bullet Probe
(BP-20'Z)	BP w/20' of Zip Wire

SENSOR OUTPUTS

Part #	Output
A/AN	10K Ohms @ 77°F (25°C) (Type III)
A/CP	10K Ohms @ 77°F (25°C) (Type II)
A/3K	3K Ohms @ 77°F (25°C)
A/1.8K	1.8K Ohms @ 77°F (25°C)
A/20K	20K Ohms @ 77°F (25°C)
A/100KS	100K Ohms @ 77°F (25°C)
A/10KS	10K Ohms @ 77°F (25°C)
A/2252	2252 Ohms @ 77°F (25°C)
A/CSI	10K Ohms @ 77°F (25°C)
A/AN-BC	10K Ohms with 11K Shunt
A/10KE	10K Ohms @ 77°F (25°C)
A/10KE1	10K Ohms @ 77°F (25°C)

THERMISTOR

ACI offers a comprehensive list of general mounting configurations (see list above). The most prominent enclosure of this series is the ACI Plastic Box. It features a robust design and advanced features not typically found in a standard sensor enclosure. Each sensor configuration is designed and manufactured for long-term quality and performance.

The ACI Thermistor Series is covered by ACI's Five (5) year limited warranty, which is located in the front of ACI's Sensors & Transmitters catalog or can be found on ACI's web site, which is www.workaci.com.



Made in the U.S.A.

SPECIFICATIONS

Accuracy	Single Point: $\pm 0.2^{\circ}\text{C}$ ($\pm 0.36^{\circ}\text{F}$)
Stability	$\pm 0.13^{\circ}\text{C}$ ($\pm 0.23^{\circ}\text{F}$)
Interchangeability	$\pm 0.2^{\circ}\text{C}$ ($\pm 0.36^{\circ}\text{F}$)
Operating Temperature Range	-40 to 302°F (-40 to 150°C)
Power Dissipation Constant	3 mW/°C
Operating Humidity	10 to 95% RH non-condensing

ORDERING

BUILD YOUR PART#

EXAMPLE

A/CP — D — 4" — PB — ----

A B C D E

STEP 1

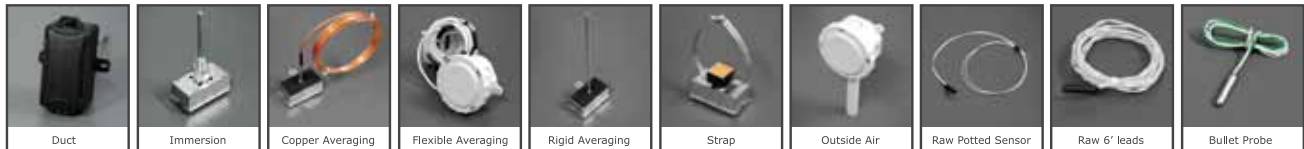
A	SENSOR SERIES	B	CONFIGURATION	C	LENGTH	D	ENCLOSURE	E	LEAD WIRE
	A/AN	(D)	Duct		4", 6", 8", 12", 18"		PB, GD, BB, 4X, EH	(----	
	A/CP	(DO)	Duct w/o box		4", 6", 8", 12", 18"		(----		6'CL2P, 10'CL2P, 20'CL2P
	A/3K	(I)	Immersion w/ two piece well		2.5", 4", 6"		PB*, GD, BB, 4X, EH	(----	
	A/1.8K	(IM)	Immersion w/ machined well		2.5", 4", 6"		PB*, GD, BB, 4X, EH	(----	
	A/20K	(INW)	Immersion w/o well		2.5", 4", 6"		PB*, GD, BB, 4X, EH	(----	
	A/100KS	(A)	Copper Averaging		8', 12', 24', 50'		PB, GD, BB, 4X, EH	(----	
	A/10KS	(FA)	Flex. Cable Averaging		8', 12', 24'		PB, GD, BB, 4X, EH	(----	
	A/2252	(RA)	Rigid Averaging		18", 24", 36"		PB, GD, BB, 4X, EH	(----	
	A/CSI	(S)	Strap		(----		PB*, GD, --, 4X, --	(----	
	A/AN-BC	(O)	Outdoor Air		(----		--, --, BB, 4X, EH	(----	
	A/10KE	(W)	Raw Potted Sensor		(----		(----		(----
	A/10KE1	(W-6')	Raw w/6' Leads		(----		(----		(----
		(BP)	Bullet Probe		(----		(----		6'CL2P, 10'CL2P, 20'CL2P
		(BP-20'Z)	BP w/20' of Zip Wire		(----		(----		

Select sensor series, configuration, length, enclosure & lead wire if needed.

The orange outlines indicate related characteristics

Two piece thermowells are not intended for moving water or high pressure service. Fluid velocity and wake frequency are primary factors in well failure. Machined thermowells should be used in these types of applications. Two part thermowells are intended for tank, or low to no flow, applications.

CONFIGURATION OPTIONS (Table B)



ENCLOSURE OPTIONS (Table D) available options shown on the same line as their corresponding configurations

(4X)	NEMA 4X
(BB)	NEMA 3R
(GD)	Galvanized Box
(EH)	Euro Housing (weather tight)
(PB)	Plastic Box

*The ACI plastic box (PB) is rated for application environments ranging from -4 to 196°F (-20 to 91°C), the box is shown with an immersion adapter.



The Plastic Box has a UL94-HB rating.

The NEMA 4X enclosure has a UL94-V2 flammability rating.

The Euro Housing enclosure has a UL94-V0 flammability rating.



Product Data

A/RH-TEMP Series

Relative Humidity/
Temperature Combinations

Product Description

The A/RH-TEMP Series relative humidity transmitters utilize a capacitive sensing element to deliver a proportional 4 to 20 mA, 0 to 5 VDC, or 0 to 10 VDC output. Accuracy is maintained over the entire operating range using a thermistor for temperature compensation. This series is offered in accuracies of 5%, 3%, 2% and 1% and in mounting configurations of room, duct, outside, and stainless steel wall plate (Please note that stainless wall plate models are not available in 1% accuracies).

The A/RH-TEMP Series has on board DIP switches which allow the user to select the desired output signal and can be powered by AC or DC power sources. In addition, field calibration can be performed by using the on board increment and decrement DIP switches. These enhancements provide increased flexibility and outstanding long-term performance.

Each A/RH-TEMP Series humidity transmitter is calibrated using a NIST Traceable Temperature/Humidity Chamber. Any ACI thermistor, RTD, or temperature transmitter may be ordered with the A/RH transmitter (see order grid). All A/RH-TT Room combination units will have a board mounted on the back of the enclosure.

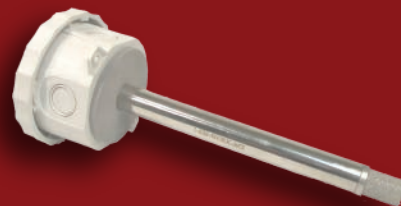
The A/RH-TEMP Series is covered by ACI's Five (5) Year Limited Warranty, which is located in the front of ACI'S SENSORS & TRANSMITTERS CATALOG or can be found on ACI's web site, which is:
www.workaci.com.

Product Specifications

RH Supply Voltage (for temperature supply voltage and additional specs, see corresponding temperature spec sheets)	4 to 20mA (250 Ohm Load): 15 to 40 VDC / 18 to 28 VAC 4 to 20mA (500 Ohm Load): 18 to 40 VDC / 18 to 28 VAC 0-5 VDC: 12 to 40 VDC / 18 to 28 VAC (4K Load Min.) 0-10 VDC: 18 to 40 VDC / 18 to 28 VAC (4K Load Min.)	
Supply Current (Voltage Output) (Current Output)	8 mA Max.	24 mA Max.
RH Measurement Range	0 to 100%	
RH Output	2-wire, 4 to 20mA (Factory Standard) 3-wire, 0-5, 0-10 VDC or 4 to 20mA	
Accuracy @ 77°F (25°C)	+/- 1% over 20% span (between 20 to 90%) +/- 2%, 3%, or 5% from 10 to 95%	
Long Term Stability	Less than 2% drift / 5 years	
Repeatability	0.5% RH	
Sensitivity	0.1 % RH	
Operating Environment	Duct / Outside: 0 to 100 % RH -40 to 140°F (-40 to 60° C)	Room: 0 to 95% RH (non-condensing) 32 to 122°F (0 to 50°C)
RH Sensor Type	Capacitive	
Approvals	*CE, RoHS *TT Series transmitters are not CE compliant	

Wiring Diagrams available at www.workaci.com

RH-TEMP



Attributes:

- Low drift
- High repeatability
- Temperature sensor output
- Field selectable output signals
- Single point field calibration
- Increased resistance against chemical vapors such as: isopropyl, benzene, ammonia and common cleaning agents.

Applications:

- Light industrial
- Pharmaceutical
- Humidity chambers
- Pool environments
- Process control



Made in the USA

Automation Components, Inc.

2305 Pleasant View Rd.
Middleton, WI 53562
PH: (608) 831-2585
FAX: (608) 831-7407

TEMPERATURE

RELATIVE HUMIDITY

PRESSURE

CURRENT

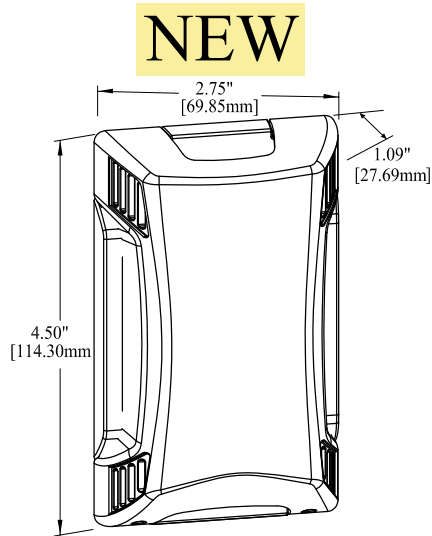
GAS SENSORS

ACCESSORIES

INTERFACE DEVICES

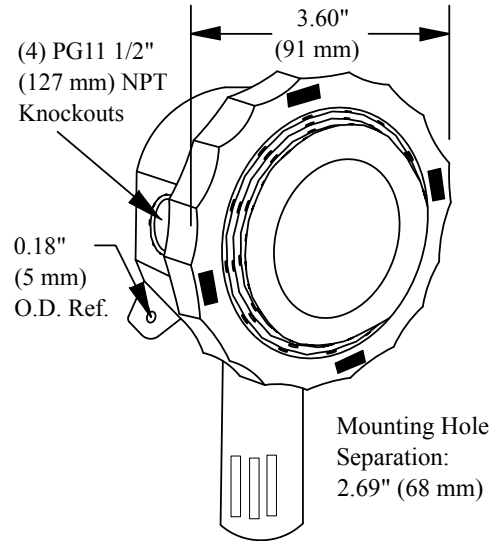
Dimensions

Room

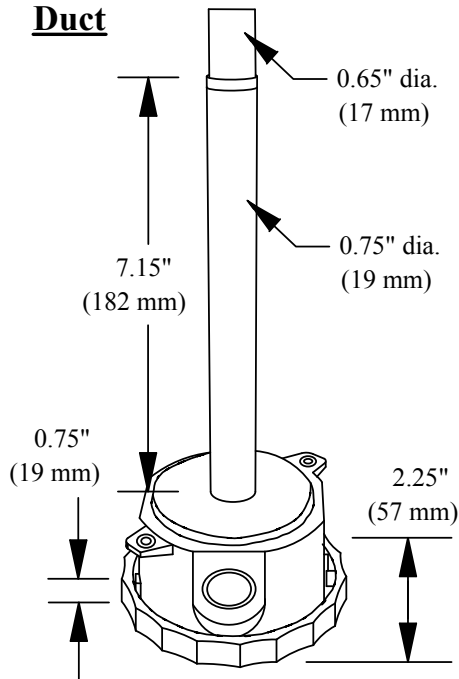


R2= New Aries Enclosure **OR R=** Previous Infinity Enclosure

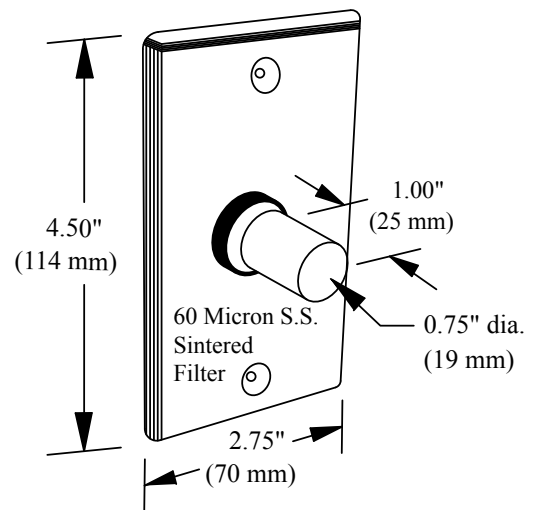
Outside



Duct



Stainless Plate



(Configurations shown are based on having resistive temperature sensors)

Ordering Information

Accuracy A/ []	Temp Sensor -[]
RH1 (+/- 1%)*	100, 1K (Platinum RTDs)
RH2 (+/- 2%)	1K-NI (Nickel RTDs)
RH3 (+/- 3%)	3K, 10KS, 100KS
RH5 (+/- 5%)	AN(10K Type III)
	CP(10K Type II)
	CSI (10K), 20K, 1.8K
Temperature Transmitters	TT1K**, TT100**
	TTM1K**, TTM100**

*Specify a 20 % RH Range when ordering an A/RH1%

Configuration -[]	TT100, TT1k, TTM100, and TTM1K model outputs -[]
(R2) Room	(4) 4 to 20mA Output
(R2O) Room w/Override	(1) 1-5 VDC Output
(R2S) Room w/Setpoint***	(2) 2-10VDC Output
(R2SO) Room w/Setpoint & Override***	***See Temperature cut sheet for setpoint specifications
(D) Duct	
(O) Outdoor Air	
(SP) Stainless Plate (Not available with the TT series or in 1% accuracy)	

**Specify a Temperature span for TT and TTM Units plus the
(SP) Stainless Plate configuration is not available for these units

2305 Pleasant View Road Middleton, WI 53562

PH: (888) 967-5224 www.workaci.com



Current Switches: Fixed Trip Point

Hx00 Series

**0.15A
Turn-On
Select Models**



H800



H900



H300



H600



SPECIFICATIONS

**5 Year
Warranty**

Sensor Power	N.O models: Induced from monitored current; H800NC: 5-30VDC, permanently connected
Insulation Class	600VAC RMS (UL), 300VAC RMS (CE)
Frequency Range	50/60 Hz, On/Off status for Variable Frequency Drive (VFD) outputs at 12 to 115 Hz (a)
Temperature Range H800NC, H300, H900	-15° to 60°C (5° to 140°F)
H600	-15° to 40°C (5° to 104°F) (to 200A); -15° to 60°C (5° to 140°F) (to 150A)
H800, H800HV	-40° to 50°C (-40° to 122°F) (to 200A); -40° to 75°C (-40° to 167°F) (to 100A, & 0.25A status output)
Humidity Range	10-90% RH non-condensing
Off State Leakage (H800NC Only)	34µA@5VDC, 200µA@30VDC
On State Voltage Drop (H800NC Only)	1.9VDC (max.) @0.1A
Terminal Block Wire Size H600, H800, H900 H300	24-14 AWG (0.2 to 2.1 mm ²); 22-16 AWG (0.3 to 1.3 mm ²)
Terminal Block Torque H600, H800, H900 H300	3.5 to 4.4 in-lbs (0.4 to 0.5 N-m); 7 in-lbs (0.8 N-m)
Agency Approvals	UL 508 open device listing; CE: EN61010-1, CAT III, pollution degree 2, basic insulation

Do not use the LED status indicators as evidence of applied voltage.

(a) VFD systems generate fields that can disrupt electrical devices. Ensure that these fields are minimized and are not affecting the sensor.

Split-Core & Solid-Core On/Off Status Current Switches

FEATURES

- More reliable for status than relays across auxiliary contacts
- Ideal for direct-drive units, unit vents, fan coil units, exhaust fans, and other fixed loads
- Low 0.15 A turn-on (H300 and H600)...ideal for small exhaust fans (not intended to detect belt loss)
- Removable mounting bracket provides installation flexibility
- Bracket on H900 can be installed in three different configurations...installer convenience
- Split-core H300, H600, and H900 for fast retrofit installation
- Mini solid-core H800 and micro split-core H300 fit in tight enclosures...saves valuable panel space
- 100% solid-state, no moving parts to fail
- Polarity insensitive output (except H800NC)
- 5-year warranty

DESCRIPTION

Hawkeye x00 on/off current switches provide a cost-effective solution for monitoring status on unit vents, exhaust fans, recirculation pumps, and other fixed loads where belt loss is not a concern.

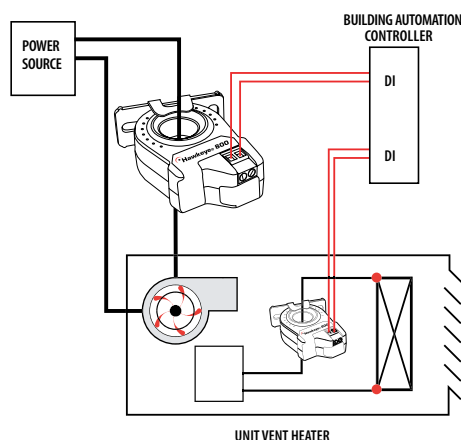
Veris has applied new technology to the H300, H600, and H800 models to achieve impressive improvement in turn-on levels. The Hawkeye H300 and H600 have the lowest turn-on current in the industry at a mere 0.15 A!

APPLICATIONS

- Monitoring status of electrical loads
- Monitoring direct-drive units, exhaust fans, process motors, and other fixed loads
- Verifying lighting run times and lighting status
- VFD output On/Off status
- Direct-Drive units, unit vents, fan coil units, exhaust fans, and other fixed loads

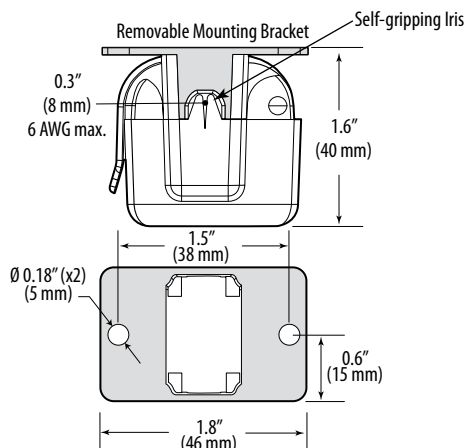
WIRING DIAGRAM

Unit Vent Heater Control

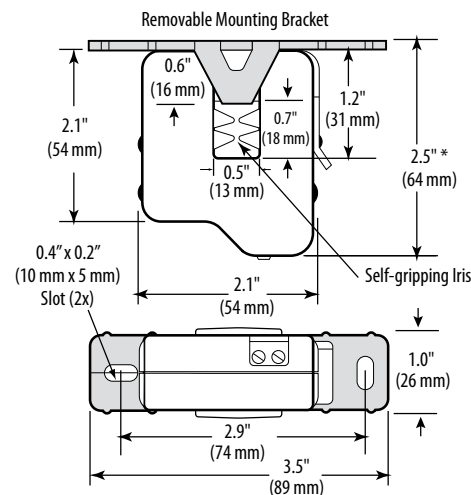


DIMENSIONAL DRAWINGS

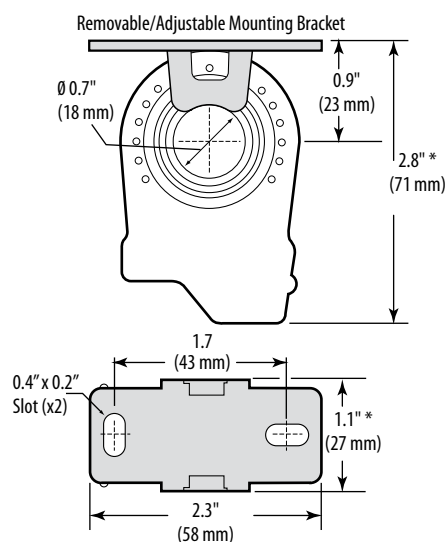
H300



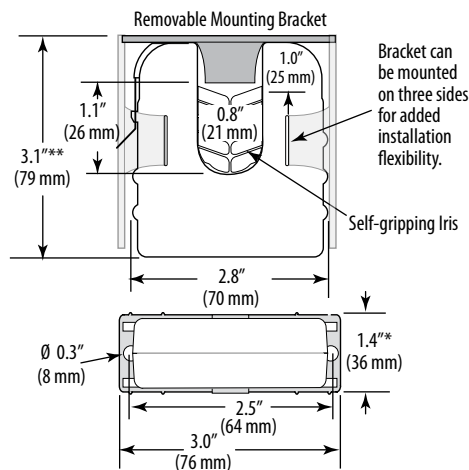
H600



H800, H800HV, H800NC



H900



* Terminal block may extend up to 1/8" over the height dimensions shown.

ORDERING INFORMATION



MODEL	AMPERAGE RANGE @ 50/60 Hz only	STATUS OUTPUT (Max.)	TRIP POINT	HOUSING	UL	CE	ROHS
H300	0.15 - 60A	N.O. 1.0A@30VAC/DC	0.15A or less	Split-core	2	•	•
H600	0.15 - 200A	N.O. 1.0A@30VAC/DC	0.15A or less	Split-core	1	•	•
H800	0.25 - 200A	N.O. 1.0A@30VAC/DC	0.25A or less	Solid-core	1	•	•
H800NC	0.5 - 200A	N.C. 0.1A@30VDC	0.5A or less	Solid-core	1		•
H800HV	0.75 - 200A	N.O. 0.5A@250VAC/DC	0.75A or less	Solid-core	3		
H900	1.5 - 200A	N.O. 1.0A@30VAC/DC	1.5A or less	Split-core	•	•	

1 Listed for use on 75°C insulated conductors.

2 Product provides functional insulation only.

3 Listed for use on 90°C insulated conductors.

ACCESSORIES

DIN Rail Clip Set (AH01 for H6xx, H8xx, H9xx; AH27 for H3xx)

DIN Rail (AV01) and DIN Stop Clip (AV02)



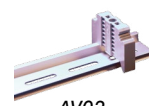
AH27



AH01



AV01



AV02



HVAC Submittal Cover Sheet

SECTION: 3 PRODUCT: Humidifiers

Paulson-Cheek Mechanical, Inc.
6145 Norhtbelt Parkway, Suite F
Norcross, GA 30071

PHONE: 770-729-0076
FAX: 770-729-1076

PROJECT: **Northside Facial Cosmetic Surgery**

LOCATION: **Alpharetta, GA**

Paulson-Cheek Mechanical, Inc.

ARCHITECT'S/ENGINEER'S STAMP

Paulson-Cheek Mechanical, Inc.

DATE RECEIVED:	<u>03/25/15</u>
MANUFACTURER:	<u>Armstrong</u>
SUPPLIER:	<u>Hill Company</u>
SUBMITTED DATE:	<u>03/25/15</u>

☒ NO ERRORS DETECTED

☐ CORRECT EXCEPTIONS NOTED

THIS APPROVAL OF SHOP DRAWINGS DOES
NOT RELIEVE THE SUBCONTRACTOR OR VENDOR
FROM THE REQUIREMENTS OF THE CONTRACT
DOCUMENTS.

CHECKED BY:	<u>Mark Walden</u>
DATE CHECKED:	<u>03/25/15</u>

The logo for Hill Company, Inc. features the company name in a bold, blue, sans-serif font. The text is enclosed within a stylized, horizontal oval shape that has a gradient from light gray to white, giving it a three-dimensional appearance.

P.O. Box 699
Roswell, Georgia 30077
Contractor Reg. No. CN003050

770-751-0850
770-751-0070 Facsimile
www.hillcompany.com



SUBMITTAL

FOR

Humidifiers H-1, H-2

Project:

Northside Facial Cosmetic Surgery

Alpharetta, GA

Mechanical Contractor

Paulson-Cheek Mechanical
6145 Northbelt Parkway
Norcross, GA 30071

Mechanical Engineer

AHA Consulting Engineers
1801 Old Alabama Road, Suite 125
Roswell, GA 30076

SUBMITTED BY:

HILL COMPANY, INC.
1305 Old Ellis Rd.
Roswell, GA 30076
dbegley@hillcompany.com
Phone: 770 480-2328
www.hillcompany.com

March 17, 2015

Armstrong Humidifier

Two (2) Armstrong Humidifiers Complete with the following:

- Model HC-6100
 - 208/1/60 voltage
 - Capacity is 3 KW – 8.3 lbs/hr.
 - Duct mounted dispersion tube for 14" wide x 14" high ductwork
 - Duct mounted air proving switch
 - Duct mounted high limit
 - Temp-R-Drain Cooler

Notes:

- 1) Confirm duct size of 14" wide x 14" high
- 2) Verify voltage of 208/1/60
- 3) Confirm that humidifiers are served with tap water (not deionized water)

DIMENSIONS & DATA CERTIFIED FOR:

Representative: **Hill Company, Inc**

Order:

Customer: **Paulson-Cheek Mechanical**

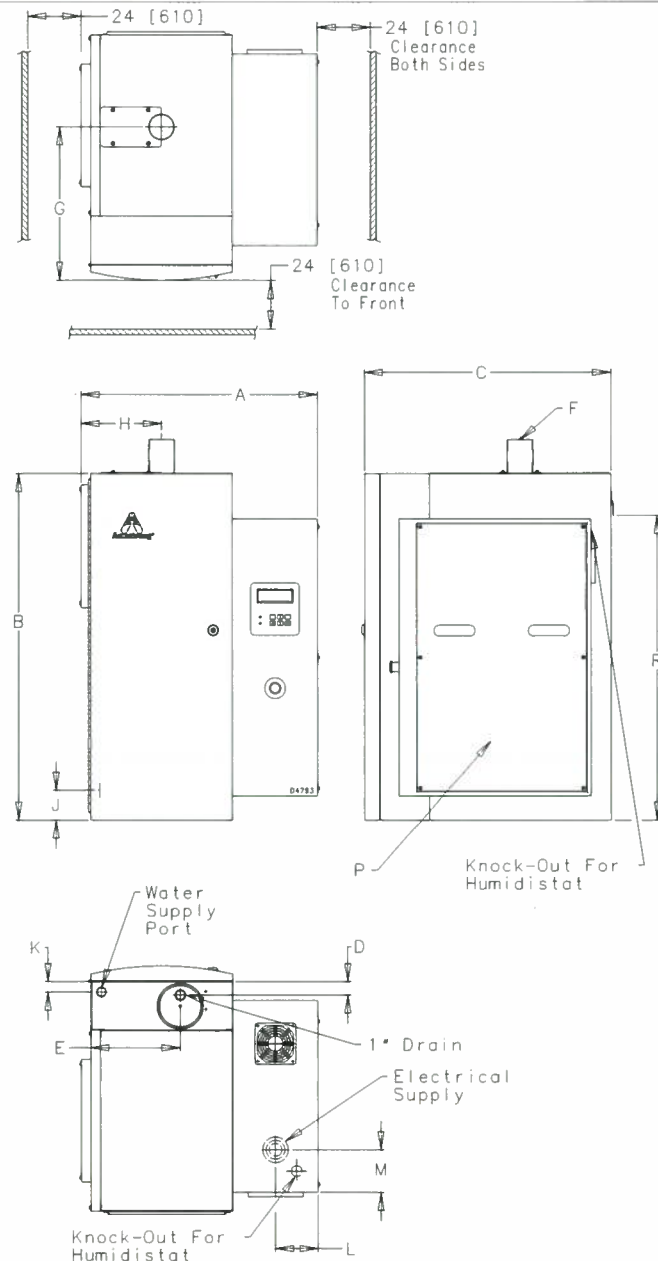
Order:

Project: **Northside Facial Cosmetic Surgery**

Requirements:

By: **DB**

Date: **3/17/15**



Dimensions Are In Inches[mm]

NAME OF PART	MATERIAL
Cabinet/ Finish	16 Ga. Stl./ Power Epoxy Coat
Tank	T304 Stn. Stl.
* Ionic Bed Module	Inert Fiber
* Ionic Bed Frame	T304 Stn. Stl.
Elements	Incoloy Sheathed Std., T316 For DI/RO
Dispersion Tube	18-8 Stn. Stl.
Tank Gasket	Closed Cell Silicone
Hose Cuff	EPDM

* Not Used In DI/RO Applications

TECHNICAL INFORMATION

DESCRIPTION	HC MODEL NOS.	
	6100	6300
A Overall Width	22.28 [566]	
B Overall Height	32.50 [826]	
C Overall Length	23.09 [586]	
D Drain Outlet- Front To C	1.25 [32]	
E Drain Outlet- Side To C	8.41 [213]	
F Steam Discharge Tube	2.38 ϕ [60]	
G Steam Outlet - Front	14.41 [366]	
H Steam Outlet - Side	7.59 [193]	
J Supply Water - Bottom	12.81 [71]	
K Supply Water - Front	1.00 [25]	
L Electrical Supply - Side	4.00 [102]	
M Electrical Supply - Back		
N Tank Outlet Access	10.13 x 10.13 [257 x 257]	
P Electrical Access Panel	16.00 x 25.20 [406 x 640]	
R Mounting Bracket - Bottom	28.56 [726]	
Water Supply Connection	3/8 Compression Fitting	
Weights: lbs. [kgs.]		
Dry Wt.	155 [70]	
Wet Wt.	230 [105]	
Shipping Wt.	175 [80]	
EHF-3 Fan Package	33 [15]	

Capacities:					Standard Package Includes:
Model No.	kw Unit	Volts (Vac)	Steam Capacity lb/hr	kg/hr	Humidifier/Mt. Brack. & Bolts
HC6100	3(Min)	208	8	[4]	Hose Cuffs/ Hose Clamps
	15(Max)	240-600	45	[20]	Options:
HC6300	18(Min)	208	48	[22]	Dwyer Duct Pressure Switch
	30(Max)	240-600	90	[41]	Humidistat: High Limit ON/OFF
For Additional Steam Capacities, See Sheet #2.					Humidistat: High Limit MODULATING
					Temp-R-Drain
					Room Or Duct Humidity Transmitter
					Modulating Back High Limit Transmitter
					BAENET Interoperability
					Lo/Hi Works Interoperability
					EUF-111 Fan Package
					0-10 Vdc Room Or Duct Humidistat



Product
**HUMIDICLEAN
HC6100/6300
SERIES**

ENGLISH

CD No.

Date

WEB
Y/N
✓

CD1338

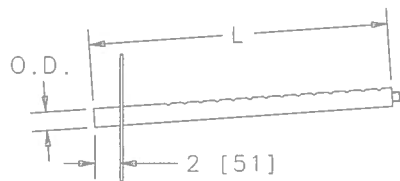
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Rev: B

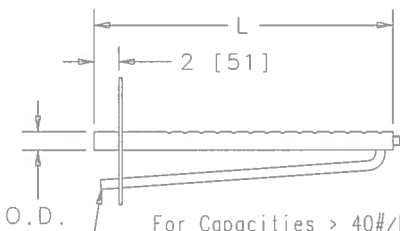
By: paulg

Steam Capacities & Nominal Amperage Ratings												
MODEL # HC6100 HC6100 DI				MODEL # HC6100/HC6100 DI						MODEL # HC6300/HC6300 DI		
VOLTAGE (VAC)	3 KW Unit			9 KW Unit			15 KW Unit		18 KW Unit		30 KW Unit	
	Nominal AMPS		Steam Output	Nominal AMPS		Steam Output	Nominal AMPS	Steam Output	Nominal AMPS	Steam Output	Nominal AMPS	Steam Output
	Single Phase	Three Phase	lbs[kg] hr	Single Phase	Three Phase	lbs[kg] hr	Three Phase	lbs[kg] hr	Three Phase	lbs[kg] hr	Three Phase	lbs[kg] hr
208	13.3	7.7	8.3[3.8]	39	22	24[11]	37	40[18]	44	48[22]	74	80[36]
240	12.9	7.5	9.0[4.1]	38	22	27[12]	36	45[20]	44	54[25]	72	90[41]
380	—	4.7		—	14		23		28		46	
480	—	3.8		—	11		18		22		36	
600	—	3.0		—	9		15		18		30	

NOTE: When unit has capacity of above 40 lb/hr [18]
use steam dispersion tube with 1/2 [51] drain



For Capacities < 40#/hr



For Capacities > 40#/hr

1/2 [51] DRAIN DISPERSION TUBES

Recommended Branch Circuits			
NOMINAL AMP RATING	WIRE		CIRCUIT BREAKER
	AWG	[mm ²]	
1-12	14	2	15
13-15	12	4	20
16-20	10	6	25
21-24			30
25-32	8	10	40
33-40			50
41-48	6	16	60
49-64	4	25	80
65-80	3	35	100
81-100	1	50	125
101-120	0		150
121-140	00	70	175
141-160	000	95	200

SELECTING PROPER DISPERSION TUBE								
MODEL# HC6100/HC6100 DI	O.D.	MODEL# HC6300 HC6300 DI	O.D.	LENGTH (L) [cm]	DUCT WIDTH		WEIGHT (LBS.) [kg] 1-1/2 O.D.	WEIGHT (LBS.) [kg] 2-3/8 O.D.
					MIN.	MAX.		
D-1	1-1/2 [38]	DL-1	2-3/8 [60]	12 [30]	11 [28]	16 [41]	2[1]	2.7[1.2]
D-1.5		DL-1.5		18 [46]	17 [43]	22 [56]		3.4[1.5]
D-2		DL-2		24 [61]	23 [58]	34 [86]	3[1.4]	4[2]
D-3		DL-3		36 [91]	35 [89]	46 [117]	4[2]	6[3]
D-4		DL-4		48 [122]	47 [119]	58 [147]		8[3.6]
D-5		DL-5		60 [152]	59 [150]	70 [178]	5[2.3]	10[4.5]
D-6		DL-6		72 [183]	71 [180]	82 [208]	6[3]	12[5.5]
D-7		DL-7		84 [213]	83 [211]	94 [239]	7[3.2]	14[6.4]
D-8		DL-8		96 [244]	95 [241]	106 [269]	8[3.6]	16[7.3]
D-9		DL-9		108 [274]	107 [272]	118 [300]	9[4]	18[8.2]
D-10		DL-10		120 [305]	119 [302]	130 [330]	10[4.5]	20[9.1]

Dimensions Are In Inches[mm]

DIMENSIONS & DATA CERTIFIED FOR:

Representative: **Hill Company, Inc**

Order:

Customer: **Paulson-Cheek Mechanical**

Order:

Project: **Northside Facial Cosmetic Surgery**

Requirements:

STANDARD PACKAGE INCLUDES:

- Humidifier utilizes disposable ionic bed inserts for tap water service to attract solids from boiling water. Ionic beds minimize downtime required for tank cleaning.
- Humidifier includes as standard an insulated painted tank enclosure.
- Humidifier includes SCR modulating control to provide 0% to 100% of maximum capacity. Humidifier is field adaptable to 0-10Vdc, 4-20 mA, 0-5 Vdc, or an on/off input signal.
- Humidifier includes end of season drain to empty tank during 72 hours of no demand. Tank pitched to assist with complete drainage.
- Humidifier shall utilize a thermal sensing device that senses temperature within a heating element to prevent overheating.
- Humidifier shall include a password protected programmable keypad with backlit alphanumeric display offering menu selectable diagnostics, ionic bed service life selection, and tank drain program.
- Keypad functions to include:
 - a. RH Graph of previous 30 days of trend data.
 - b. Real Time Clock
 - c. Error list log showing all previous errors experienced in past 30 days, timed stamped.
- Humidifier shall modulate fill of makeup water into tank to prevent reduction of steam output during fill cycle for consistent and responsive output of produced steam.
- A minimum tank temperature to be maintained during short periods of no demand through use of an aquastat to improve responsiveness to increases of demand.
- Humidifier includes electrical terminals for installation of controlling stat, duct high-limit stat, fan interlock switch, and Class 2 alarm device.
- Humidifier includes integral Emergency Manual Stop for quick shut down.
- Humidifier tank shall be constructed of 14 ga. 304 stainless steel and heating elements shall include an incoloy sheath for tap water service and stainless steel sheath for RO (reverse osmosis) or DI (deionized) water.
- Humidifier is interoperable through native MODBUS communications protocol. Upon request, humidifier may be supplied interoperable through BACnet or LonWorks communications protocol.

TUV Certification

OSHA requires certification by an NRTL (Nationally Recognized Testing Laboratory) and TUV Rheinland of North America, like UL and ETL, is one NRTL. The Armstrong HumidiClean Series HC-6000 was tested in accordance with the standards found in UL 998 by TUV and carries the cTUVus listing for North America as well as the CE listing for Europe.

The cTUVus indicates that the equipment has been exposed to rigorous testing and evaluation and is found to comply with relevant standards. In other words, the equipment is found to be safe as per definition of the relevant standard.

 Armstrong <small>www.armstronginternational.com</small>	Product	ENGLISH	CD No.	Date
	HUMIDICLEAN HC6100/6300 SERIES	WEB	CD1338	9/29/06
		Y N ✓	Rev: A Sht. 3	By: paulg

DIMENSIONS & DATA CERTIFIED FOR:

Representative: **Hill Company, Inc**

Order:

Customer: **Paulson-Cheek Mechanical**

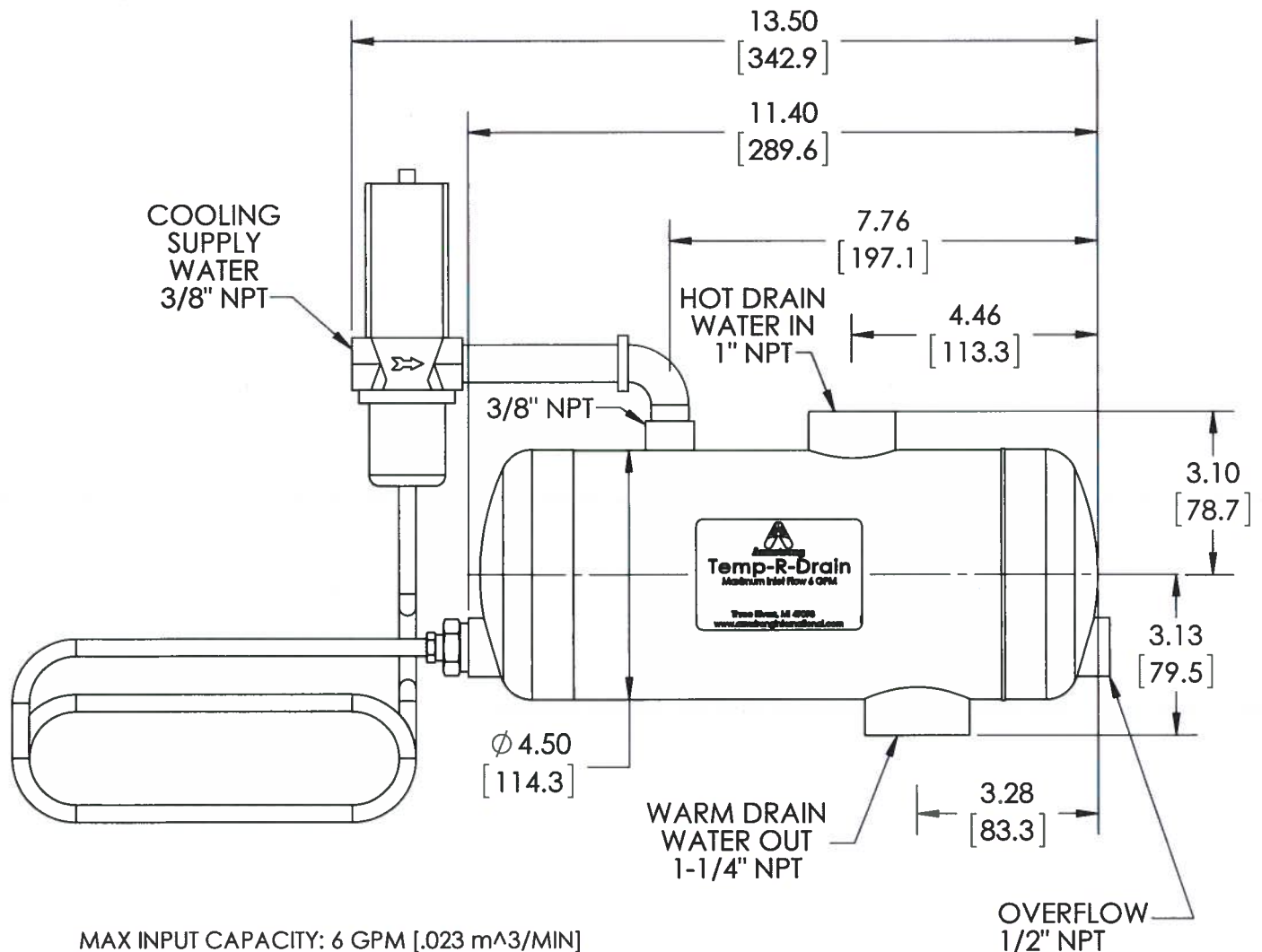
Order:

Project: **Northside Facial Cosmetic Surgery**

Requirements:

By: **DB**

Date: **3/17/15**




MAX INPUT CAPACITY: 6 GPM [.023 m³/MIN]
 HOT DRAIN WATER IN: 212°F [100°C]
 WARM DRAIN WATER OUT: 140°F [60°C]
 COOLING WATER SUPPLY: 70°F [21°C]

NOTES:

1. UNIT MAY BE HARD PIPED INTO PLUMBING SYSTEM BECAUSE OF INTEGRAL AIR GAP.

Dimensions Are In Inches [mm]

 www.armstronginternational.com	Product	ENGLISH	CD No.	Rev.	Date
	TEMP-R-DRAIN	WEB Y/N	1119	B	06/07/2011
			SHEET 1 OF 1		By: Jacob Puentes



HumidiClean Series HC-6000 Humidifier

Revolutionary ionic bed technology that carries a lot of weight



The Ionic Bed. The Final Resting Place Of Ordinary Humidifiers.

Brace yourself. The Armstrong HumidiClean™ is going to change everything you know about humidifiers. The process starts with an extraordinary technology that will make traditional humidifiers obsolete. Leave them dead in their tracks, you might say.

The ionic beds you see on this page are made of a fibrous medium: the ionic bed. There are six such beds per tank in a HumidiClean humidifier (more in the Models HC-6500 and HC-6700). They attract solids from the water as its temperature rises – minimizing the buildup of solids on inner tank walls and heating elements. So you have a humidifier that stays clean except, of course, for the ionic beds. And once they have absorbed their capacity of solids, the unit even tells you to change them. It takes about 15 minutes and is absolutely hassle free.



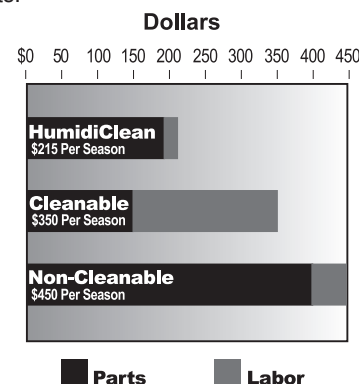
See For Yourself How Much HumidiClean Could Save Over Traditional Units

As Table 118-1 illustrates, maintaining a HumidiClean with patented ionic bed technology is more economical than caring for either traditional cleanable or non-cleanable electronic units. When you combine costs for labor and materials and calculate the differences for seasonal maintenance, the new Armstrong HumidiClean is the obvious winner.

But to get an idea of just how big your advantage could be, multiply your savings by the number of units you have and project your answer over a few years. Can you think of a better reason to choose HumidiClean? We can't either, but we can think of several more reasons.

Table 118-1. Maintenance Cost Comparison

Maintenance cost comparison for a humidifying season using Model HC-6100. Results may vary depending on your parts and labor costs.



Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit armstronginternational.com for up-to-date information.

HumidiClean Passes No Current Through Water

HumidiClean's resistance-type design has a proven track record for safety. Totally different compartments keep plumbing completely separated from electrical components.

In addition, Armstrong has built several other safety features into HumidiClean. These include a key-locked access door, password protected programmable keypad, diagnostic indicating LCD display, continual-checking diagnostic routines, high- and low-water level detection, internal tank temperature sensing, overcurrent protection and connections for a Class 2 alarm device.

HumidiClean uses submersed electric heating elements to generate steam. In other words, water quality or conductivity do not affect the unit's ability to generate full output on demand. Although normally used with tap water, HumidiClean can, upon request, be installed with deionized, demineralized, softened or reverse osmosis water sources. Said another way: You get the benefit of a humidifier capable of operating over a wide range of water quality without frequent replacement of parts or bothersome, messy cleaning.

Less Scale Means Greater Efficiency

Capacity is the first victim of the scale that quickly builds up in traditional evaporative or steam-generating humidifiers. As scale gathers in the pan or on heating elements or electrodes, output declines. This gradually leads to a loss of humidity control. From this point on, things get steadily worse – until cleaning or the replacement of parts occurs.

HumidiClean with its remarkable ionic bed technology builds up deposits on its ionic bed inserts instead of tank walls or heating elements. As a result, it operates efficiently longer, its tank stays cleaner longer, and it maintains nearly maximum output throughout its service life.

Ionic Bed Technology Saves Energy

Because of carbonate buildup, most humidifiers drain every 20-45 minutes. HumidiClean's ionic beds attract these carbonates from water, so the primary reason to drain the tank is to eliminate sodium. Since this is typically only necessary approximately once every 12 hours, the unit wastes much less hot water, thereby saving energy dollars.

HumidiClean Series HC-6000 Offers Enhanced Control of Room RH

HumidiClean uses SCR controls as standard on all units for full modulation of steam output. The humidifier's responsiveness to increased demand is enhanced through the use of an aquastat to maintain a minimum water temperature in the tank during short periods of no demand. The unit also modulates fill of makeup water into the tank to prevent reduction of steam output during the fill cycle for consistent and responsive output of produced steam during the boil down/fill cycle.

HumidiClean Communications Capability

HumidiClean Series HC-6000 offers native MODBUS communications protocol as well as a Class II alarm circuit for monitoring purposes. Optionally, HumidiClean may be ordered to operate with either BACnet or LonWorks protocols.

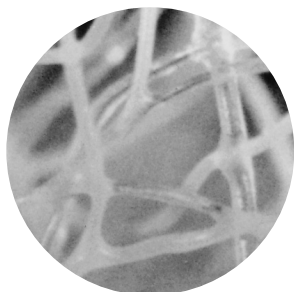
Why Humidify?

As the temperature of indoor air goes up, its relative humidity (RH) goes down. When RH falls to levels commonly found in heated indoor environments, moisture-retaining materials such as wood, paper, textile fibers and a wide range of food and chemicals begin to deteriorate.

Dry air can also increase static electricity buildup, potentially impacting production or the use of office equipment. Computer rooms, printing operations, clean rooms and laboratories are especially sensitive to static charges due to dry air. Low RH also affects indoor air quality.

Steam is virtually a sterile medium offering many sanitation benefits over other types of humidification. It is recommended for essentially all commercial, institutional and industrial applications.

Ionic Bed Technology



New ionic bed



After 400 hours



After 800 hours

These microscopic photos show how the ionic bed fibers (magnified 52.5X) collect solids throughout their service life. A new ionic bed weighs approximately 1/3 pound. When it reaches its capacity, an ionic bed may weigh more than 2-1/2 pounds. A light on the control panel indicates when to replace HumidiClean's beds.

Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit armstronginternational.com for up-to-date information.



How HumidiClean Works

When power is supplied to the unit, the water fill valve energizes, and water enters the tank. Once the level reaches the low-water switch, the heating elements are energized (assuming there's a call for steam output). The unit continues to fill until the high-water switch is energized. The humidifier then produces steam in response to the humidistat's input signal. The tank will fill at regular intervals if all conditions remain constant. Periodic tank drainage is based on active time of the heating elements, but may be field-adjusted to water conditions.

The HumidiClean power module accepts a proportional signal and, in response, pulses power to the heating elements to provide fully modulated output. Steam output is continuously adjusted to satisfy necessary humidity requirements.

The standard HumidiClean includes the Armstrong modulating control humidistat with a 0-10 Vdc control signal. The unit is field-adjustable to accept any of the following common control signals as the main control signal: on/off (SPST relay), 0-10 Vdc, 4-20 milliamp, 0-5 Vdc. Additional input terminals are provided for on/off air flow and duct high-limit humidity controls.

Completing A Service Life Cycle

After the ionic beds have absorbed 90% of their capacity, the LCD display will flash the "EOL" (end of life) message. (See control panel photo.) If the HumidiClean is not serviced by replacing the ionic beds and re-setting the EOL, the unit will continue to produce steam on demand for the remaining 10% of ionic bed capacity. During this period, the unit will display a flashing "EOL" message. After the ionic beds have reached 100% capacity, the unit will shut down by draining the tank and will not respond to any call for humidity. Servicing the unit is now required. The service life cycle is field-adjustable to accommodate varying water quality and the specifics of the individual application.

Simple Bed Removal

Toggle from "STEAM GENERATION" on the LCD to "MANUAL DRAIN". This will cause the unit to drain. When this drain is complete, turn the main power off at the disconnect.

Use caution as tank will still be quite warm. Remove screws from outer cover. Remove wingnuts from access panel. Remove old beds by pulling them up and off the holding pins in the tank, sliding them out through the access opening. Further cleaning of the tank or heating element surface is typically not required.

Install new beds in the same manner, sliding them through the access panel and positioning them on the holding pins. After all beds have been replaced, replace the tank access panel and outer cover. Turn the power on at the main power disconnect. Toggle to and reset EOL. Unit will fill with water and return to normal operation. Total service time is usually no more than 15 minutes. (Used ionic beds contain no environmentally hazardous material and may simply be thrown away.)

Drying Cycle

If there is no demand for steam for a continuous 72-hour period, HumidiClean initiates a routine to dry ionic beds by draining and energizing the heating elements for short intervals. This drying cycle eliminates standing water concerns and improves indoor air quality.

Series HC-6000 Control Panel

The HumidiClean control panel is designed to quickly and simply display operating conditions. If an error is detected, a diagnostic display indicates the specific condition.



Service As Easy As One, Two, Three



Step 1. Remove HumidiClean outer cover and remove tank access panel. Remove the old ionic bed inserts.



Step 2. Install new inserts in place of the old ones.



Step 3. Reinstall tank access panel and outer cover. Restart HumidiClean.

Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit armstronginternational.com for up-to-date information.

Selection and Ordering Procedure



Consider the following factors to select and order the proper unit.

1. Compute the capacity required.

You must compute the maximum amount of moisture required to determine that HumidiClean is properly sized for service.

For detailed information on calculating humidification loads, refer to the Humidification Engineering section of this catalog or Armstrong's Humid-A-ware™ humidification sizing and selection software. Both may be downloaded from Armstrong's web site at armstronginternational.com. Humidification loads are generally sized on a worst-case basis where design conditions exist for a limited time and do not require a safety factor. HumidiClean is designed to drain infrequently, because accumulation of tank solids is not as problematic as with other humidifiers. This conserves water and energy. There will be a short period during this drain cycle when there will be no steam output. Consult your Armstrong Representative or the factory if this poses a control problem for your system.

Example: Assume the humidification load is 38 lbs/hr (17.3 kg/hr) and available power supply is 480 volt/3 phase. Referring to Table 125-3, Page 125, we find a 15 kW Model HC-6100 HumidiClean is required. The branch circuit should be rated for 25 amps. See Table 125-2, Page 125.

2. Specify electrical characteristics of unit required.

Specify the voltage, kW, phase and cycles for unit on the order. Determine total amperage for installation purposes.

3. Specify the humidity level and range.

The standard Armstrong humidistat is 0-10 Vdc control and is adjustable by a front-mounted dial from 5-95% RH. Specify room or duct type humidistat. Or you may provide your own humidistat and/or controller. If you are providing your own controller, specify control signal type.

4. Use proper connecting materials.

Two short hose cuffs per dispersion tube are provided to be used with 2" (nom.) hard copper tube to connect the tank to the steam dispersion tube (if applicable). Armstrong recommends

using insulated copper tubing. The maximum recommended distance is 40 feet (12 meters) of equivalent length copper tubing. See Installation, Operation and Maintenance Bulletin 539 for additional guidelines.

1. Specify spare ionic bed inserts.

If HumidiClean is going to be in continuous service on a year-round basis, Armstrong recommends the purchase of a spare set of beds.

Duct Unit

2. Specify steam dispersion tube (Table 121-1).

Select the proper steam dispersion tube that meets the duct requirements. As an example, if the duct in which you are installing the humidifier has a width between 17" and 22", you should use the steam dispersion tube(s) D-1.5 (DL-1.5 for HC-6300, HC-6500 or HC-6700).

Alternatively, specify HumidiPack™ and indicate the following:

- Duct height and width
- CFM
- Duct air temperature
- Final duct RH%
- Non-wettable vapor distance available
- Maximum allowable air pressure drop (inches W.C.)

Figure 121-1. Dispersion Tube

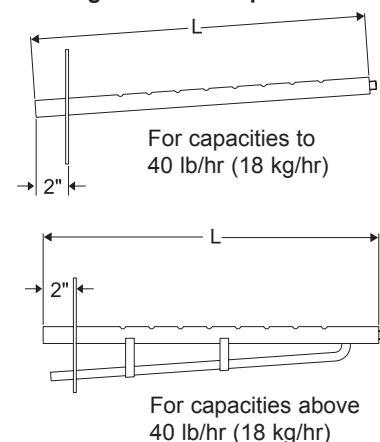


Table 121-1. Selecting Proper Steam Dispersion Tube

Steam Disp. Tube Model	Steam Disp. Tube Model		Duct Width				Weight		
All HC-6000 Series			Min.		Max				
	in	mm	in	mm	in	mm	lb	kg	
	DL-1	12	304	11	279	16	406	3	1.4
	DL-1.5	18	457	17	432	22	559	3	1.4
	DL-2	24	609	23	584	34	864	4	2
	DL-3	36	914	35	889	46	1168	6	3
	DL-4	48	1219	47	1194	58	1473	8	3.6
	DL-5	60	1524	59	1499	70	1778	9	4
	DL-6	72	1829	71	1803	82	2083	10	4.5
DL-7	84	2133	83	2108	94	2388	11	5	
DL-8	96	2438	95	2413	106	2693	12	5.5	
DL-9	108	2743	107	2718	118	2998	13	6	
DL-10	120	3048	119	3023	130	3302	14	6.4	

HC6300, HC6300DI, HC6500, HC6500DI, HC6700, HC6700DI Model "DL" Diameter is 2-3/8".

Models HC-6500 and HC-6700 require a minimum of two (2) dispersion tubes).

Designs, materials, weights and performance ratings are approximate and subject to change without notice. Visit armstronginternational.com for up-to-date information.

1. Specify water source.

Specify if the service will include tap, deionized, demineralized, softened or reverse osmosis water.

2. Specify options required.

- **Duct high-limit humidistat.** (Recommended). You may order a duct high-limit stat. A typical setting for the high-limit stat is 85% RH. Stat opens when relative humidity exceeds settings. A modulating high-limit stat is also available for VAV systems.

Figure 122-1. HC-6100 or HC-6300 Duct Type Distribution

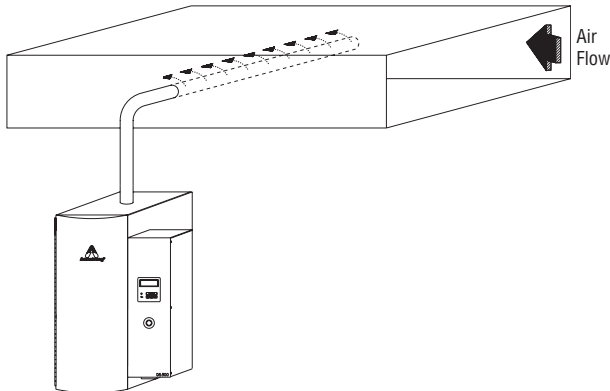


Figure 122-2. HC-6100 or HC-6300 with Duct Located below HumidiClean

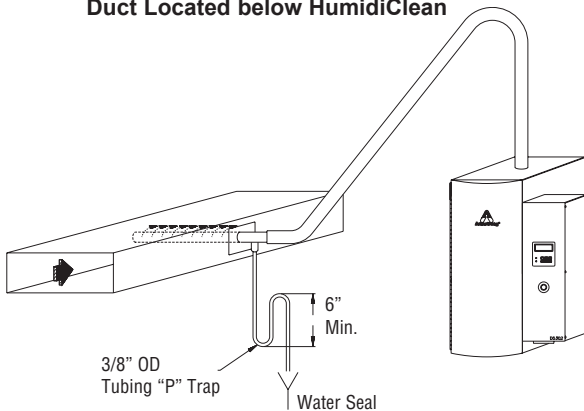
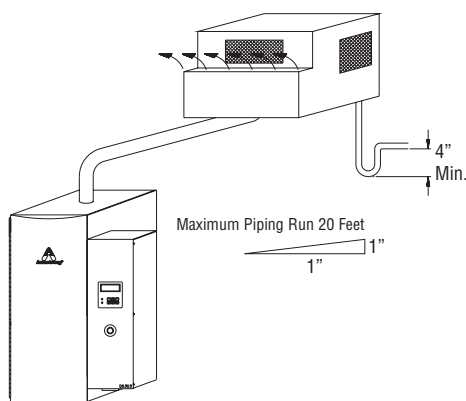


Figure 122-3. HC-6100 or HC-6300 with EHF-3 Fan Package Mounted on Wall



- **Fan interlock.** (Recommended). You may order a duct pressure switch to activate the humidifier by sensing air flow in a duct system. The pressure switch prevents humidifier operation if there is insufficient air movement in the duct system.

Area Unit

1. Specify a fan package for each HumidiClean.

The EHF-3 offers a remote mounted, direct area discharge option for use with HumidiClean (See Figure 122-3). EHF-3 offers capacities to 120 lbs/hr (54 kg/hr). A minimum of two EHF-3 fan units are required for Model HC-6500 or HC-6700. **Please consult factory when applying EHF-3 fan package with Model HC-6700.**

Figure 122-4. HC-6100 or HC-6300 HumidiClean Piped to HumidiPack

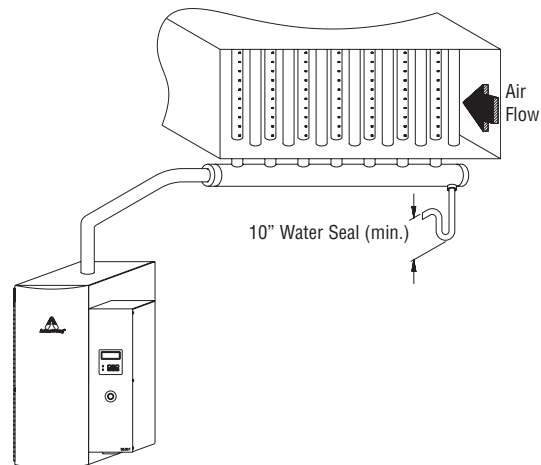
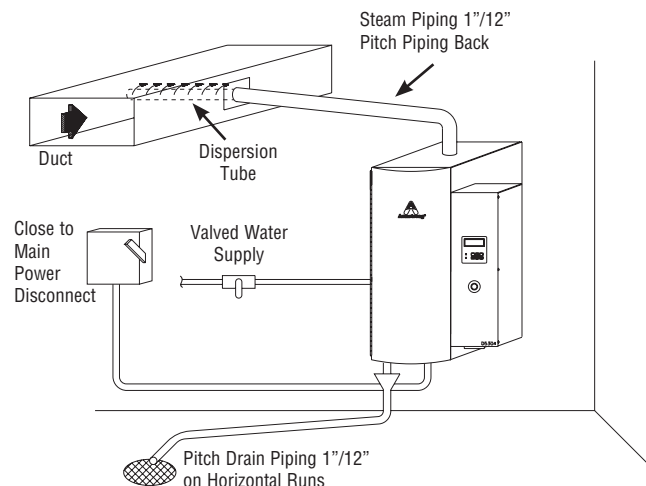


Figure 122-5. HC-6100 or HC-6300 General Installation Concept





Specification

HumidiClean Series 6000

PART 1 PRODUCTS

STEAM GENERATOR TYPE HUMIDIFIERS

Steam humidifier for distribution of humidity (steam vapor) into air handling duct system shall be of the self-contained, electrically controlled design.

- A. Humidifier shall generate steam from ordinary tap water
- B. Humidifier shall utilize disposable ionic bed inserts for tap water service to attract solids from boiling water. Ionic beds assist in ensuring controllability through responsive and consistent steam production regardless of water quality and minimize downtime required for tank cleaning.
- C. Humidifier shall have all internal components contained in a steel cabinet with key-locked access doors to prevent unauthorized access.
- D. Humidifier shall come standard with insulated painted tank enclosure.
- E. Humidifier shall monitor tank operating history, and display will indicate when unit needs ionic bed replacement. Service life cycle may be field adapted to match water quality.
- F. Humidifier shall have SCR modulating control to provide 0%-100% of maximum capacity. Humidifier is field adaptable to utilize onboard PID controller for use with 0-5Vdc, 0-10Vdc, 4-20mA sensors or can accept an input signal from external controller/humidistat (0-5Vdc, 0-10Vdc, 4-20mA or on/off).
- G. Tank drain shall cycle based on operating history in order to conserve water and energy. Drain cycle shall be field adjustable and drain will be tempered by the fill valve.
- H. Humidifier includes end of season drain to empty tank during 72 hours of no demand. Tank pitched to assist with complete drainage.
- I. Unit shall monitor tank water level and will shut down power to the heating elements to prevent unsafe operation upon failure of the drain system, fill system, or upon an overcurrent condition
- J. Humidifier shall utilize a thermal sensing device that senses temperature within a heating element to prevent overheating.
- K. Humidifier shall incorporate stainless steel conductance-actuated probes with Teflon insulation for liquid level control on tap water service.
- L. Humidifier shall include a password protected programmable keypad with backlit alphanumeric display offering menu selectable diagnostics, ionic bed service life selection, and tank drain program.
- M. Keypad functions to include:
 - a. RH Graph of Previous 30 days of trend data.
 - b. Real Time Clock.
 - c. Error list log showing all previous errors experienced in past 30 days, timed stamped.
- N. Humidifier fill water line shall have an air gap to prevent back-flow (siphoning) of tank water into the potable water supply system
- O. Humidifier shall modulate fill of makeup water into tank to prevent reduction of steam output during fill cycle for consistent and responsive output of produced steam



Specification

- P. A minimum tank temperature to be maintained during short periods of no demand through use of an aquastat to improve responsiveness to increases of demand
- Q. Humidifier shall incorporate electrical terminals for installation of controlling stat/sensor, duct high-limit stat/sensor, fan interlock switch, and Class 2 alarm device
- R. Humidifier shall be supplied with integral Emergency Manual Stop for quick shut down.
- S. Humidifier shall be supplied with stainless steel steam dispersion tube(s) which provide uniform steam distribution over the entire tube length and shall be supplied at various lengths (through 10') to adequately span the widest dimension of the airstream.
- T. Humidifier shall be supplied with hose cuffs for connection to hard copper tube (customer supplied).
- U. Humidifier tank shall be constructed of 14 ga. 304 stainless steel and the heating elements shall include an incoloy sheath for tap water.
- V. Humidifier is interoperable through native MODBUS communications protocol. Upon request, humidifier may be supplied interoperable through BACnet or LonWorks communications protocol.

Optional points:

- 1) Airflow proving switch shall be provided for field installation.
- 2) Duct mounted high limit humidistat shall be provided.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install Armstrong humidifiers as indicated on drawings and as indicated in schedules in accordance with manufacturer's instructions.



HVAC Submittal Cover Sheet

SECTION: 4

PRODUCT: Grilles, Registers, & Diffusers

Paulson-Cheek Mechanical, Inc.
6145 Norhtbelt Parkway, Suite F
Norcross, GA 30071

PHONE: 770-729-0076
FAX: 770-729-1076

PROJECT: **Northside Facial Cosmetic Surgery**

LOCATION: **Alpharetta, GA**

Paulson-Cheek Mechanical, Inc.

ARCHITECT'S/ENGINEER'S STAMP

Paulson-Cheek Mechanical, Inc.

DATE RECEIVED: 03/25/15
MANUFACTURER: Nailor Industries
SUPPLIER: GAA
SUBMITTED DATE: 03/25/15

☒ NO ERRORS DETECTED

☐ CORRECT EXCEPTIONS NOTED

THIS APPROVAL OF SHOP DRAWINGS DOES
NOT RELIEVE THE SUBCONTRACTOR OR VENDOR
FROM THE REQUIREMENTS OF THE CONTRACT
DOCUMENTS.

CHECKED BY: Mark Walden
DATE CHECKED: 03/25/15



GEORGIA AIR ASSOCIATES

SUBMITTAL

PRODUCT: GRILLES, REGISTERS & DIFFUSERS PAGE: 1 OF 1

MANUFACTURER: NAILOR INDUSTRIES FILE: _____

SPEC. PARA. NO.: MECH. DWGS. DATE: 3/23/15

PROJECT: NORTHSIDE FACIAL COSMETIC SURGERY ARCH: _____
LOCATION: ALPHARETTA, GA ENGR: AHA CONSULTING ENGINEERS
REMARKS: _____ CUST: PAULSON-CHEEK MECHANICAL

TAG	MODEL NO.	QTY	SIZE	FINISH	DWG. NO.	REMARKS
SD-1	6200*06x06*L*24x24*AW*4A* PLA*SQR-06	21	6x6/6"	AW White	6200-2	24x24 Lay-in, Aluminum, 4-way, w/ SRT
SD-2	6200*09x09*L*24x24*AW*4A* PLA*SQR-08	30	9x9/8"	AW White	6200-2	24x24 Lay-in, Aluminum, 4-way, w/ SRT
SD-3	6200*12x12*L*24x24*AW*4A* PLA*SQR-10	5	12x12/10"	AW White	6200-2	24x24 Lay-in, Aluminum, 4-way, w/ SRT
SR-1	51DV-O*12x08*S*AW*A	4	12x8	AW White	5100-2	Alum., Surface Mount w/ OBD
RG-1	4302A*24x24*L*AW	1	24x24	AW White	4302	24x24 Non-Ducted Lay-in, Aluminum
RG-2	5145H-O*12x18*S*AW*A	5	12x18	AW White	5100-3	Alum., Surface Mount w/ OBD
RD-1	4360A*06*L*24x24*AW	8	6"	AW White	4360-2	24x24 Lay-in, Aluminum
RD-2	4360A*08*L*24x24*AW	13	8"	AW White	4360-2	24x24 Lay-in, Aluminum
RD-3	4360A*10*L*24x24*AW	14	10"	AW White	4360-2	24x24 Lay-in, Aluminum
RD-4	4360A*12*L*24x24*AW	3	12"	AW White	4360-2	24x24 Lay-in, Aluminum
ER-1**	5145H*10x08*S*AW*A	13	10x8**	AW White	5100-3	Alum., Surface Mount

**** Please Verify** that all 'ER-1' grilles are to be 10x8 neck size. Also, **Please Verify** that OBD's are not required at 'ER-1' grilles, as scheduled.

LFD-1	92LFD-AL*48x24*10*L*AW	8	10" Inlet	AW White	92LFD-AL	48x24 Lay-in, Aluminum, w/ Standard Damper
LD-1	5010*48x02*C*AW*MM	9	48" Long	AW White	5000-1A,B	Concealed Surface Mount, (2) 1" Wide Slots
LD-1 Plenums	5310I*48x02*08*C*MM	9	8" Inlet	Mill	5300-1	48" Long Insulated Plenums

Notes:

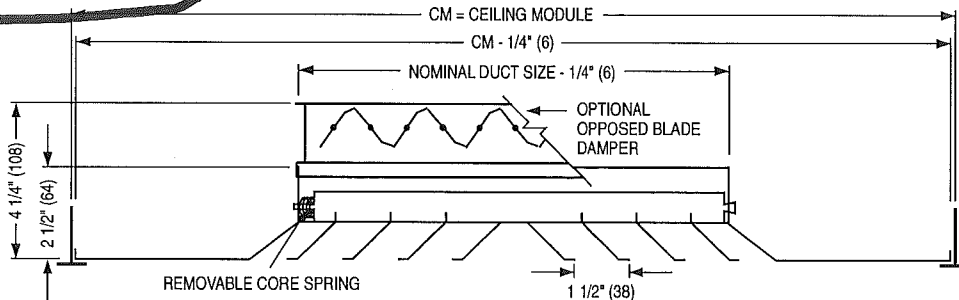
- 1) **Please Verify** all frame styles prior to release.
- 2) 14x14 door louver per Lower Level, Note 2 shall be provided by others.

TAG: SD-1,2,3



PATTERN CEILING DIFFUSERS **ALUMINUM • SQUARE, RECTANGULAR OR** **ROUND NECK** **MODELS: 6200 AND 6200-0 TYPE L**

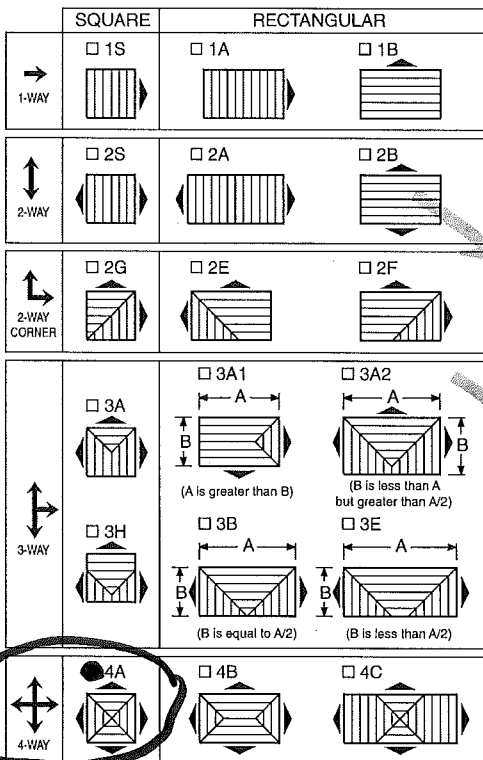
TYPE L LAY-IN T-BAR



If the ceiling module is more than 3" (76) larger than the neck size of the diffuser in either or both dimensions, a steel, module sized extended panel will be added.
 Minimum duct size: 6 x 6 (152 x 152).
 Maximum duct size: see table.
 Available in 3" (76) increments only.

IMPERIAL MODULES				METRIC MODULES	
Imperial Units (in.)		Metric Units (mm)		Metric Units (mm)	
CM	Maximum Duct Size	CM	Maximum Duct Size	CM	Maximum Duct Size
12 x 12	9 x 9	305 x 305	229 x 229	300 x 300	152 x 152
20 x 20	15 x 15	508 x 508	381 x 381	500 x 500	381 x 381
24 x 24	21 x 21	610 x 610	533 x 533	600 x 600	457 x 457
24 x 24	21 x 21	610 x 610	533 x 533	600 x 600	457 x 457
48 x 24	45 x 21	1219 x 610	1143 x 533	1200 x 600	1067 x 457

CORE STYLE SELECTION



DESCRIPTION:

1. Material: Aluminum. Extended panel where required is corrosion-resistant coated steel.
2. Model 6200 is a high capacity ceiling diffuser available in 1, 2, 3 or 4-way blow patterns to provide a tight horizontal airflow pattern from maximum to minimum airflow. Ideal for VAV applications.
3. Spring-loaded removable core.
4. Standard finish is AW Appliance White.

OPTIONS:

☒ PLA Aluminum Extended Panel.

SQUARE AND RECTANGULAR NECK

☐ Steel opposed blade damper. Model 6200-0.

☐ Aluminum opposed blade damper. Model 6200-0A.

ROUND NECK

☒ SQR Square to round transition collar

☐ SQR-0 Square to round transition collar for use over O.B.D.

☐ 4275 Radial Opposed Blade Damper (round)

☐ 4250 Radial Sliding Blade Damper (round)

☐ 4675 Butterfly Damper (round)

OPTIONAL FINISH:

☐ SP Special Specify

Patterns are shown in plan view (looking down into inlet).

Project: Northside Facial Cosmetic Surgery

Location: Alpharetta, GA

Mech. Cont: Paulson-Cheek Mechanical

Mech. Engineer: AHA Consulting Engineers

Submitted by: Georgia Air Associates

Dimensions are in inches (mm).

DATE	B SERIES	SUPERSEDES	DRAWING NO.
10 - 23 - 07	6200	4 - 24 - 03	6200-2

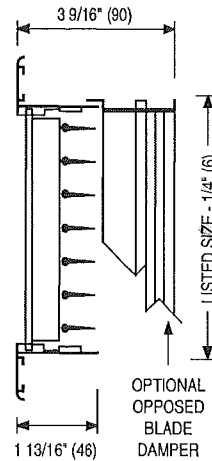
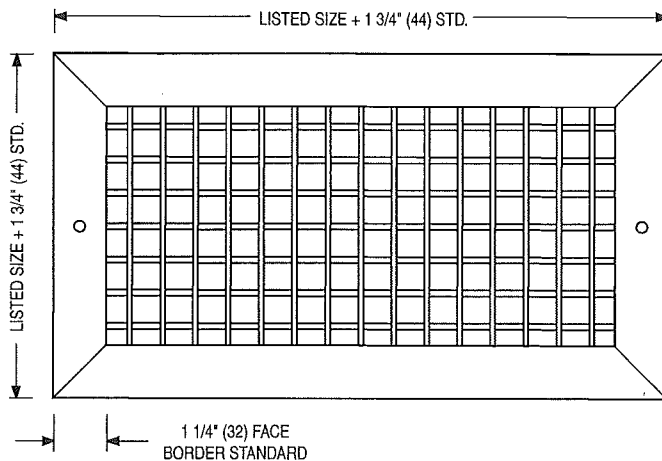
TAG: SR-1



ALUMINUM SUPPLY GRILLES & REGISTERS

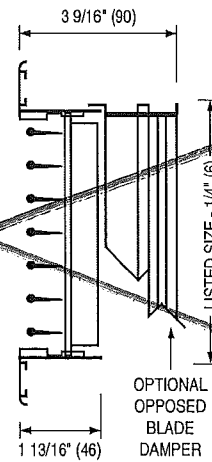
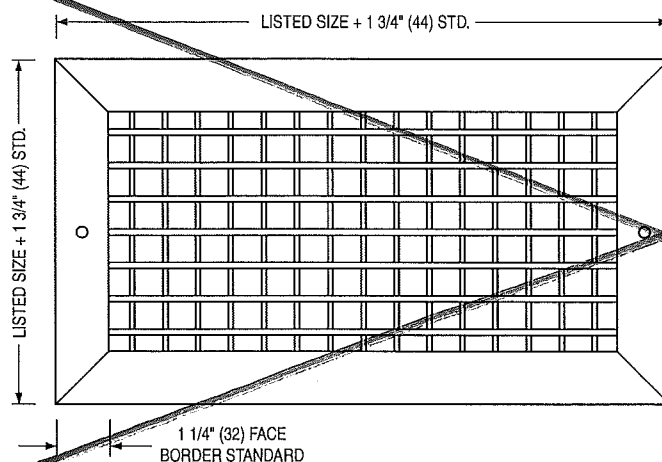
DOUBLE DEFLECTION • ADJUSTABLE

MODELS: 51DV(-O) AND 51DH(-O) TYPE S



☐ **MODEL 51DV**
Double Deflection Grille
Vertical Front Blades

☒ **MODEL 51DV-O**
Double Deflection Register
Vertical Front Blades
(Includes O. B. Damper)



☐ **MODEL 51DH**
Double Deflection Grille
Horizontal Front Blades

☐ **MODEL 51DH-O**
Double Deflection Register
Horizontal Front Blades
(Includes O. B. Damper)

DESCRIPTION:

1. Construction: Extruded aluminum heavy gauge frame mechanically interlocked with hairline mitered corners for strength. Two sets of perpendicular extruded aluminum 'teardrop' blades on 3/4" (19) centers provide air pattern control in two planes. Blades are individually pivoted to ensure positive positioning when adjusted to desired deflection setting.
2. Optional roll-formed steel opposed blade damper has a screw driver slot operator accessible through face of register.
3. Minimum size is 4" x 4" (102 x 102).
Maximum size is 48" x 48" (1219 x 1219).
4. Type S Surface Mount standard frame has a 1 1/4" (32) face border and a 1" (25) overlap margin.
5. Standard fastening is Type A countersunk screw holes.
6. Standard finish is AW Appliance White.

OPTIONS:

1. Finish:
 - ☐ SA Satin (clear) anodized
 - ☐ SP Special _____
2. Fastening:
 - ☐ Type C Concealed mounting straps
 - ☐ Type D Concealed screw holes in neck
 - ☐ Type N None
3. ☐ OA Aluminum opposed blade damper.
4. ☐ Type NF Narrow frame with 1" (25) face border and a 3/4" (19) overlap margin. O.A. flange to flange dim. = listed size + 1 1/4" (32).
5. ☐ PF Plaster frame
6. ☐ IS Insect screen
- ☐ Other _____

Project: Northside Facial Cosmetic Surgery

Location: Alpharetta, GA

Mech. Cont: Paulson-Cheek Mechanical

Mech. Engineer: AHA Consulting Engineers

Submitted by: Georgia Air Associates

Dimensions are in inches (mm).

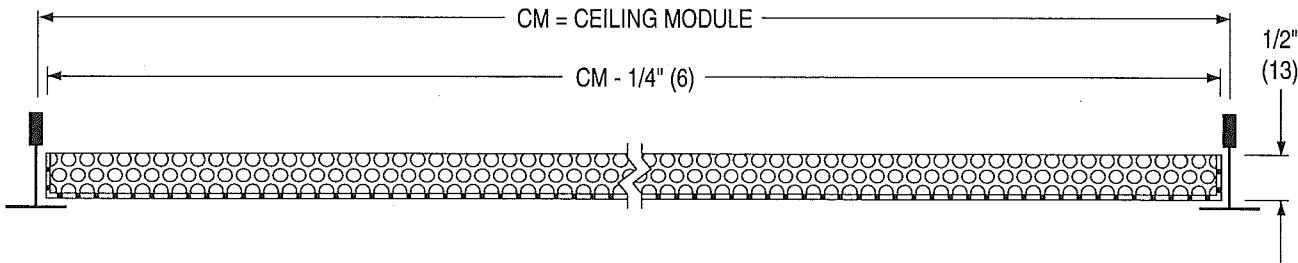
DATE	B SERIES	SUPERSEDES	DRAWING NO.
2-1-11	5100	2-23-04	5100-2

TAG: RG-1



PERFORATED CEILING DIFFUSERS
RETURN PANEL
MODELS: ~~4302~~, 4302A

TYPE L Lay-in



Available Ceiling Module Sizes

Ceiling Module CM	
Imperial Modules (inches)	Metric Modules (mm)
12 x 12	300 x 300
16 x 16	400 x 400
20 x 20	500 x 500
24 x 24	600 x 600
48 x 24	1200 x 600

DESCRIPTION:

1. Material: Corrosion-resistant steel.
2. Model 4302 perforated return is designed for nonducted return or exhaust air applications.
3. Panels match Models 4320, 4320CB, 4320F and 4320M in appearance after installation.
4. Installs in Lay-in T-Bar ceiling systems.
5. Perforated face has 3/16" diameter holes on 1/4" staggered centres.
6. Standard finish is AW Appliance White.

OPTIONS:

- ☒ Aluminum construction. (Model 4302A).
- Finish:
- ☒ SP Special

Project: Northside Facial Cosmetic Surgery
Location: Alpharetta, GA
Mech. Cont: Paulson-Cheek Mechanical
Mech. Engineer: AHA Consulting Engineers
Submitted by: Georgia Air Associates

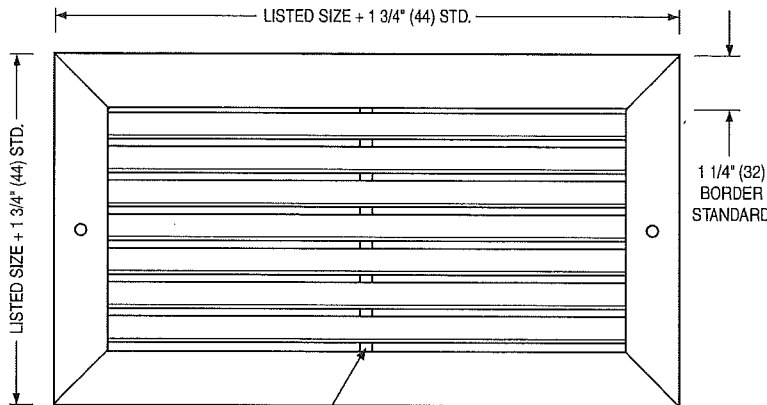
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29 - 3 - 00R	4300	30 - 4 - 99	4302

TAG: RG-2 & ER-1

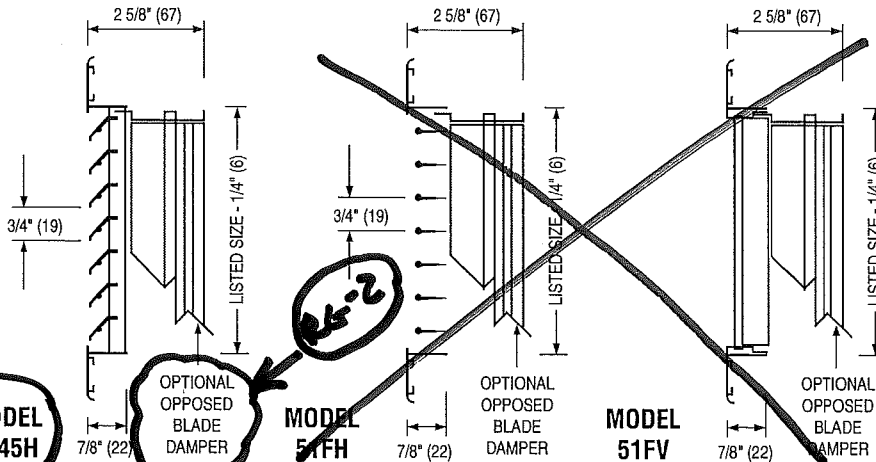


ALUMINUM RETURN GRILLES & REGISTERS

FIXED BLADES • 3/4" (19) SPACING
MODELS: 5145H(-O), 5145V(-O), 51FH(-O)
AND 51FV(-O) TYPE S



Concealed reinforcing mullions on 45 degree models are on 16" (406) max. centers.



- ☒ **MODEL 5145H**
Single Deflection Grille
Fixed 45° Horizontal Blades
- ☒ **MODEL 5145H-O**
Single Deflection Register
Fixed 45° Horizontal Blades
(Includes O. B. Damper)

- ☐ **MODEL 5145V**
Single Deflection Grille
Fixed 45° Vertical Blades
- ☐ **MODEL 5145V-O**
Single Deflection Register
Fixed 45° Vertical Blades
(Includes O. B. Damper)

- ☐ **MODEL 51FH**
Single Deflection Grille
Fixed 0° Horizontal Blades

- ☐ **MODEL 51FH-O**
Single Deflection Register
Fixed 0° Horizontal Blades
(Includes O. B. Damper)

- ☐ **MODEL 51FV**
Single Deflection Grille
Fixed 0° Vertical Blades

- ☐ **MODEL 51FV-O**
Single Deflection Register
Fixed 0° Vertical Blades
(Includes O. B. Damper)

DESCRIPTION:

1. Construction: Extruded aluminum.
Rigid heavy-gauge frame mechanically interlocked with reinforced mitered corners. Rigid streamlined shape solid blades on 3/4" (19) centers are fixed at 0 or 45 degrees to match and compliment the supply grilles and registers. 45 degree models utilize a concealed rear reinforcing mullion and utilize a single blade pack that produces a continuous louvered blade appearance. 0 degree models utilize a visible face mullion when blade length exceeds 16" (406).
2. Optional roll-formed steel opposed blade damper has a screwdriver slot operator accessible through face of register.
3. Minimum size is 4" x 4" (102 x 102).
Maximum size is 48" x 48" (1219 x 1219).
4. Type S Surface Mount standard frame has a 1 1/4" (32) face border and a 1" (25) overlap margin.
5. Standard fastening is Type A countersunk screw holes.
6. Standard finish is AW Appliance White.

OPTIONS:

1. Finish:
 - ☐ SA Satin (clear) anodized
 - ☐ SP Special _____
2. Fastening:
 - ☐ Type C Concealed mounting straps
 - ☐ Type N None
3. ☐ OA Aluminum opposed blade damper.
4. ☐ Type NF Narrow frame with 1" (25) face border and a 3/4" (19) overlap margin. O.A. flange to flange dim. = listed size + 1 1/4" (32).
5. ☐ PF Plaster frame
6. ☐ IS Insect screen
7. ☐ Other _____

Project: Northside Facial Cosmetic Surgery
 Location: Alpharetta, GA
 Mech. Cont: Paulson-Cheek Mechanical
 Mech. Engineer: AHA Consulting Engineers
 Submitted by: Georgia Air Associates

Dimensions are in inches (mm).

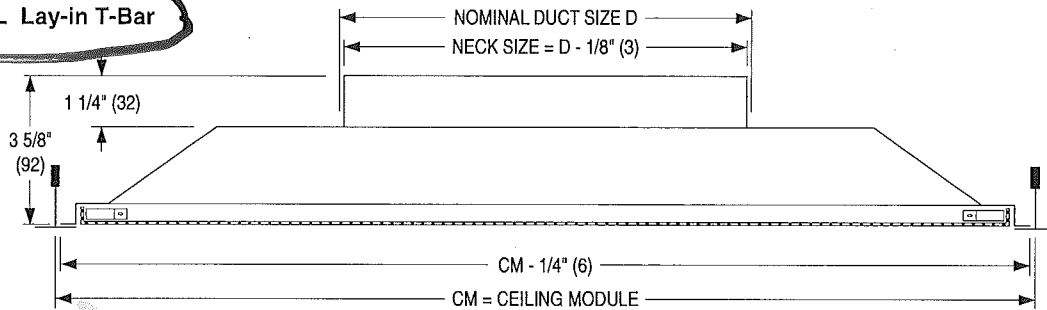
DATE	B SERIES	SUPERSEDES	DRAWING NO.
2-1-11	5100	15-3-00R	5100-3

TAG: 20-1



PERFORATED CEILING DIFFUSERS RETURN • FLUSH FACE • ROUND OR SQ. NECK MODELS: ~~4360~~, 4360A, ~~4360AA~~

TYPE L Lay-in T-Bar



Available Combinations of Ceiling Module vs. Neck Size

Ceiling Module CM		Nominal Duct Size D			
Imperial Modules	Metric Modules	Round Neck		Square Neck	
		Imperial Units (in.)	Metric Units (mm)	Imperial Units (in.)	Metric Units (mm)
12 x 12	300 x 300	6, 8	152, 203	6 x 6, 8 x 8	152 x 152, 203 x 203
16 x 16	400 x 400	6, 8, 10, 12	152, 203, 254, 305	6 x 6, 8 x 8, 10 x 10, 12 x 12	152 x 152, 203 x 203, 254 x 254, 305 x 305
24 x 12	600 x 300	6, 8	152, 203	6 x 6, 8 x 8, 18 x 6	152 x 152, 203 x 203, 457 x 152
20 x 20	500 x 500	6, 8, 10, 12, 14	152, 203, 254, 305, 356	6 x 6, 8 x 8, 10 x 10, 12 x 12, 14 x 14	152 x 152, 203 x 203, 254 x 254, 305 x 305, 356 x 356
24 x 24	600 x 600	6, 8, 10, 12, 14, 15, 16, 18	152, 203, 254, 305, 356, 381, 406, 457	6 x 6, 8 x 8, 10 x 10, 12 x 12, 14 x 14, 15 x 15, 16 x 16, 18 x 18	152 x 152, 203 x 203, 254 x 254, 305 x 305, 356 x 356, 381 x 381, 406 x 406, 457 x 457
48 x 24	1200 x 600	6, 8, 10, 12, 14, 15, 16, 18	152, 203, 254, 305, 356, 381, 406, 457	6 x 6, 8 x 8, 10 x 10, 12 x 12, 14 x 14, 15 x 15, 16 x 16, 18 x 18	152 x 152, 203 x 203, 254 x 254, 305 x 305, 356 x 356, 381 x 381, 406 x 406, 457 x 457

DESCRIPTION:

1. Material: Corrosion-resistant steel. (Model 4360 is standard).
2. Designed to match supply air models 4320, 4320CB, 4320F and 4320M in appearance and construction detail, except that the air pattern controllers are not required and are omitted. This version is for ducted return applications; for connection to flexible or rigid round duct or square duct.
3. Removable face has concealed latches for easy access to optional damper.
4. Perforated face has 3/16" (5) diameter holes on 1/4" (6) staggered centres.
5. Standard finish is AW Appliance White.

OPTIONS:

- Aluminum perforated face/steel backpan. (Model 4360A).
- Aluminum perforated face and backpan. (Model 4360AA).
- EX External Foil Back Insulation, installed. R-4.2 (24 x 24 max).
- EXB External Foil Back Insulation, ships loose. R-4.2 (24 x 24 max).
- MIB Molded Insulation Blanket. R-6.0 (24 x 24 only).

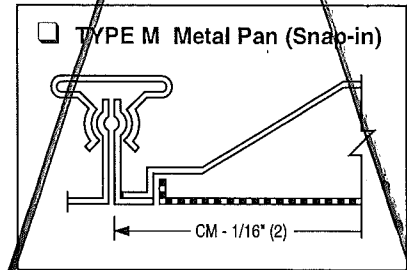
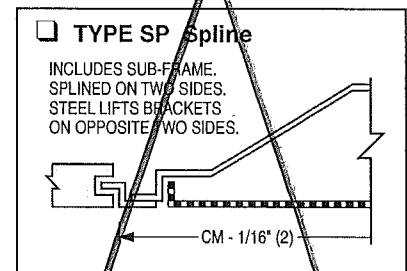
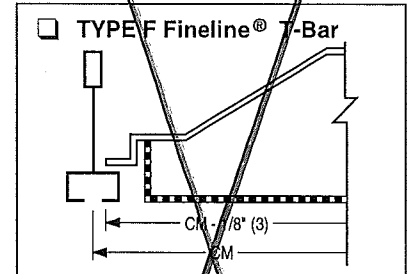
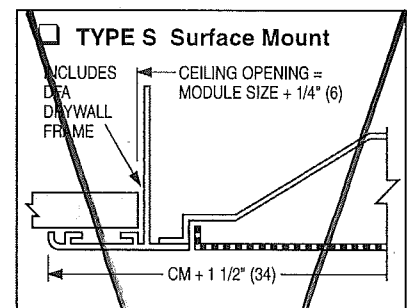
Project: Northside Facial Cosmetic Surgery

Location: Alpharetta, GA

Mech. Cont: Paulson-Cheek Mechanical

Mech. Engineer: AHA Consulting Engineers

Submitted by: Georgia Air Associates



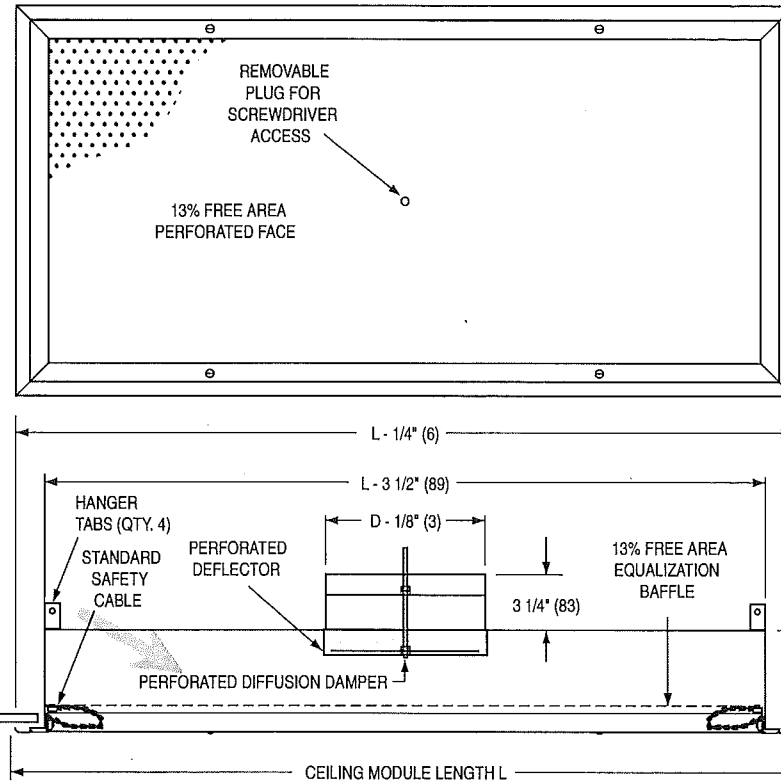
Dimensions are in inches (mm).

DATE	B SERIES	SUPERSEDES	DRAWING NO.
8 - 30 - 13	4300	11 - 5 - 07	4360-2

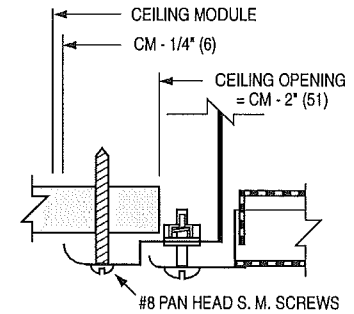
TAG: LFD-1



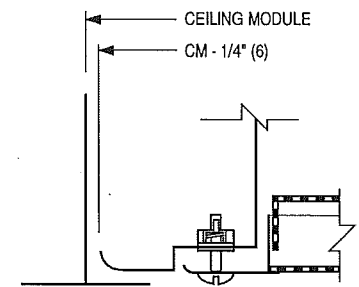
LAMINAR FLOW CEILING DIFFUSER
ALUMINUM • DUAL CHAMBER
CRITICAL ENVIRONMENT APPLICATIONS
LOW CAPACITY DESIGN
MODEL: 92LFD-AL



☐ **TYPE S Surface Mount Detail**



☒ **TYPE L* Lay-in T-Bar Detail**



* Compatible with all T-Bars up to 2" (51) wide.

Ceiling Module Sizes L x W & Nominal Round Duct Sizes D

L x W	Imperial Modules (inches)		48 x 12	60 x 12	72 x 12	24 x 24	36 x 24	48 x 24	60 x 24	72 x 24
	Metric Modules (mm)		1200 x 300	1500 x 300	1800 x 300	600 x 600	900 x 600	1200 x 600	500 x 600	1800 x 600
Duct Size D	(inches)		6, 7, 8	6, 7, 8	6, 7, 8	6, 7, 8, 10	6, 7, 8, 10, 12	7, 8, 10, 12	8, 10, 12	8, 10, 12
	(mm)		152, 178, 203	152, 178, 203	152, 178, 203	152, 178, 203, 254	152, 178, 203, 254, 305	178, 203, 254, 305	203, 254, 305	203, 254, 305

DESCRIPTION:

The Model 92LFD-AL Laminar Flow Diffuser is a low capacity/airflow range design and produces a non-aspirating, low velocity vertical air pattern. Recommended face velocity range is 20 – 60 cfm/sq. ft. Installed above the operating table in a hospital operating room, the 'clean' conditioned air flows over the operating table so helping to protect and effectively isolate the patient from contaminated air. The "dual chamber" design and internal baffles provide improved air distribution across the perforated diffuser face resulting in superior performance. The only significant amount of room air entrainment occurs at the outer boundary of the laminar flow mass, outside the confines of the operating table. Other applications include clean rooms such as research laboratories, animal labs, food processing, pharmaceutical labs and computer rooms where localized heavy cooling loads present a problem.

CONSTRUCTION:

1. Extruded aluminum frame and aluminum perforated face with 3/32" dia. holes on 60 degree 1/4" (6) staggered centers (13% free area). The face plate is removable for cleaning and is secured by 1/4 turn fasteners.
2. Corrosion resistant steel backpan, perforated inlet deflector ring and disk type damper. Damper adjustment through removable face plug.
3. Standard safety cables prevent accidental dropping of removable face.
4. Standard finish is AW Appliance White polyester powder coat.

OPTIONS:

- ☐ AB Aluminum backpan, deflector and damper.
- Finish:
- ☐ AAW Acrylic (Appliance White).
- ☐ SP Special

Dimensions are in inches (mm).

Project: Northside Facial Cosmetic Surgery
 Location: Alpharetta, GA
 Mech. Cont: Paulson-Cheek Mechanical
 Mech. Engineer: AHA Consulting Engineers
 Submitted by: Georgia Air Associates

DATE	B SERIES	SUPERSEDES	DRAWING NO.
9 - 15 - 10	9200	7 - 26 - 10	92LFD-AL

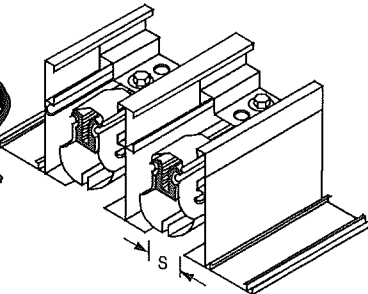
TAG: LD-1



LINEAR SLOT DIFFUSERS **EXTRUDED ALUMINUM** **MODEL SERIES: 5000** **FRAME TYPES A, B, C, D**

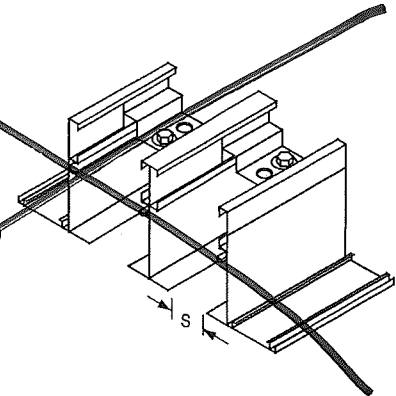
Supply Model

- ☒ 5050
(S = 1/2" [13] slot)
- ☒ 5075
(S = 3/4" [19] slot)
- ☒ 5010
(S = 1" [25] slot)
- ☒ 5015
(S = 1 1/2" [38] slot)

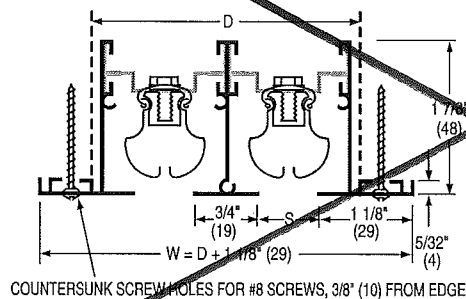


Return Model

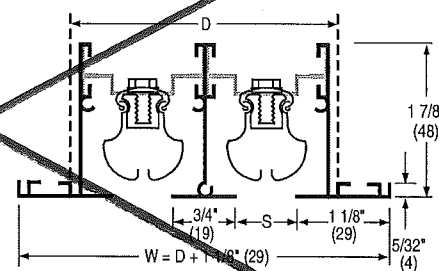
- ☐ 5050R
(S = 1/2" [13] slot)
- ☐ 5075R
(S = 3/4" [19] slot)
- ☐ 5010R
(S = 1" [25] slot)
- ☐ 5015R
(S = 1 1/2" [38] slot)



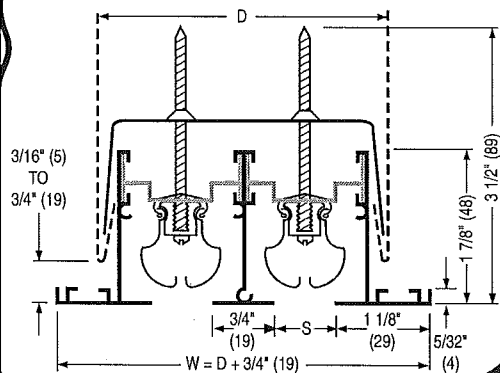
☒ **Type A** Flange Frame / Screw Mounting



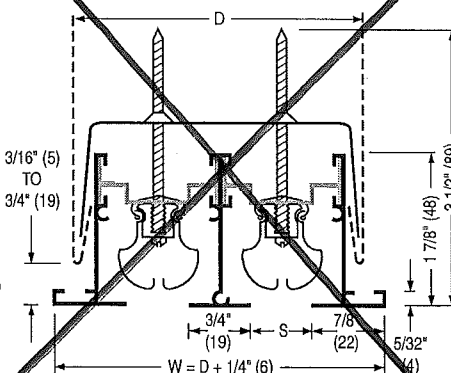
☐ **Type B** Flange Frame / Duct Mounting



☒ **Type C** Flange Frame / Concealed Mounting



☐ **Type D** Flange Frame / Concealed Mounting



FINISH:

- ☒ AW Appliance White (Standard)
 - ☐ BR Brushed and clear coat lacquer
 - ☐ SP Special
- All with black pattern controllers

NOTES:

1. Material: Extruded aluminum frame. Corrosion-resistant steel pattern controllers.
2. The volume and direction of the discharge air can be adjusted by moving the pattern controllers.
3. Model 5000R return and the Model 5000 supply diffusers are identical except for the pattern controllers.
4. Greater than 6 foot (1829) lengths are supplied in multiple sections.
5. The maximum length of the pattern controller is 36" (914). Diffusers longer than 36" (914) are provided with multiple pattern controller sections.
6. Alignment strips on the frames and sub-frames provide superior, positive aligning.
7. Available with 1 to 10 slots.
8. Standard lengths of diffuser sections are 1, 2, 3, 4, 5 and 6 ft (305, 610, 914, 1219, 1524 and 1829).

Project: Northside Facial Cosmetic Surgery
 Location: Alpharetta, GA
 Mech. Cont: Paulson-Cheek Mechanical
 Mech. Engineer: AHA Consulting Engineers
 Submitted by: Georgia Air Associates

Dimensions are in inches (mm).

DATE	B SERIES	SUPERSEDES	DRAWING NO.
11 - 1 - 12	5000	10 - 25 - 07	5000-1A

TAG: LD-1



LINEAR SLOT DIFFUSERS
(IMPERIAL UNITS – INCHES)
EXTRUDED ALUMINUM
MODEL SERIES: 5000
FRAME TYPES A, B, C

Duct Width D Dimension
S = slot width

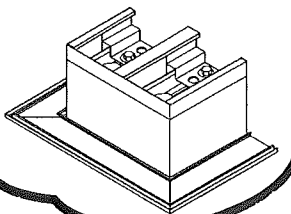
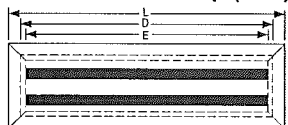
Frame Type	No. of Slots	5050 5050R S = 1/2"	5075 5075R S = 3/4"	5010 5010R S = 1"	5015 5015R S = 1 1/2"
A B	1	1 5/8"	1 7/8"	2 1/8"	2 5/8"
	2	2 7/8"	3 3/8"	3 7/8"	4 7/8"
	3	4 1/8"	4 7/8"	5 5/8"	7 1/8"
	4	5 3/8"	6 3/8"	7 3/8"	9 3/8"
	5	6 5/8"	7 7/8"	9 1/8"	11 5/8"
	6	7 7/8"	9 3/8"	10 7/8"	13 7/8"
	7	9 1/8"	10 7/8"	12 5/8"	16 1/8"
	8	10 3/8"	12 3/8"	14 3/8"	18 3/8"
	9	11 5/8"	13 7/8"	16 1/8"	20 5/8"
	10	12 7/8"	15 3/8"	17 7/8"	22 7/8"

Frame Type	No. of Slots	5050 5050R S = 1/2"	5075 5075R S = 3/4"	5010 5010R S = 1"	5015 5015R S = 1 1/2"
C	1	2"	2 1/4"	3"	3"
	2	3 1/4"	3 3/4"	4 1/4"	5 1/4"
	3	4 1/2"	5 1/4"	6"	7 1/2"
	4	5 3/4"	6 3/4"	7 3/4"	9 3/4"
	5	7"	8 1/4"	9 1/2"	12"
	6	8 1/4"	9 3/4"	11 1/4"	14 1/4"
	7	9 1/2"	11 1/4"	13"	16 1/2"
	8	10 3/4"	12 3/4"	14 3/4"	18 3/4"
	9	12"	14 1/4"	16 1/2"	21"
	10	13 1/4"	15 3/4"	18 1/4"	23 1/4"

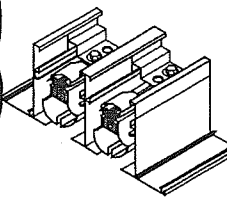
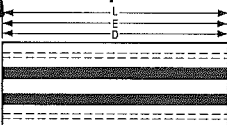
End Caps Configuration

SPECIFY
☐ MM
☐ FO
☐ MC
☐ FC
☐ OO
☐ OC
☐ CC

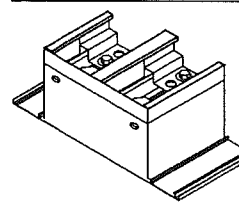
M - Mitered End Cap (Std.)



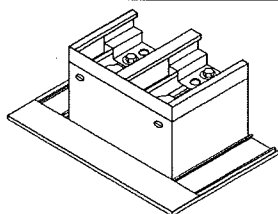
O - Open End




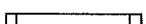


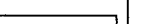
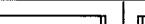
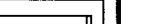
C - Flat End Cap



F - Flanged End Cap



Overall Length Dimensions and End Cap Position

Frame Type														
	M	M	F	F	M	O	M	C	O	O	O	C	C	C
	E	L	E	L	E	L †	E	L †	E	L	E	L	E	L
A, B	D - 1/2	D + 1	D - 1/2	D + 1 1/2	D - 1/4	D + 1/2	D - 3/16	D + 9/16	D	D	D - 1/16	D - 1/16	D - 1/8	D - 1/8
C	D - 1/2	D + 1	D - 1/2	D + 1 1/2	D - 1/4	D + 1/2	D - 3/16	D + 9/16	D	D	D - 1/16	D - 1/16	D - 1/8	D - 1/8
D	D - 1/2	D - 1/8	D - 1/2	D + 1	D - 1/4	D + 1/4	D - 3/16	D + 7/16	D	D	D - 1/16	D - 1/16	D - 1/8	D - 1/8

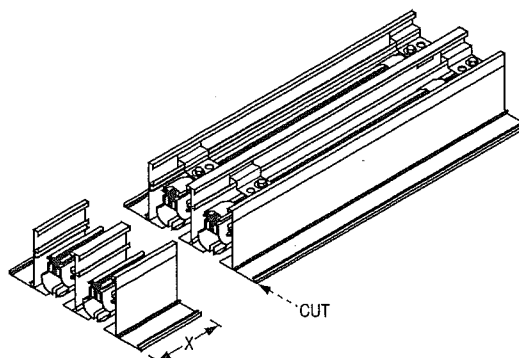
† Configurations FO and FC: Add 1/4.

D = Duct length E = End cap position L = Overall length

Field Trimming of Diffusers

If "X" is less than 3" (76) at either end (6" [152] total), standard Model 5000 or 5000R can be field-cut.

• Factory-Cut Diffusers Model 5000 or 5000R are ordered for a specific length from the factory, but can be trimmed as much as 6" (152) in length, (3" [76] from each end) with a fine tooth, high speed carbon steel metal cutting blade.



Project: Northside Facial Cosmetic Surgery

Location: Alpharetta, GA

Mech. Cont: Paulson-Cheek Mechanical

Mech. Engineer: AHA Consulting Engineers

Submitted by: Georgia Air Associates

Dimensions are in inches (mm).

DATE	B SERIES	SUPERSEDES	DRAWING NO.
11 - 1 - 12	5000	10 - 25 - 07	5000-1B

TAG: LD-1 Plenums



LINEAR SLOT DIFFUSER PLENUMS **ADAPTORS FOR MODEL SERIES 5000** **LINEAR SLOT "ICE TONG" DIFFUSER • 1 - 4 SLOT** **MODELS: 5350, 5375, 5310 AND 5315(MP)**

1 THROUGH 4 SLOT **STANDARD MODELS:**

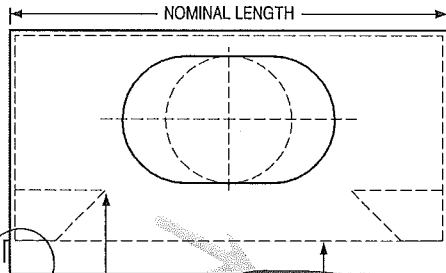
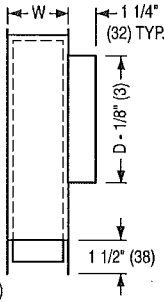
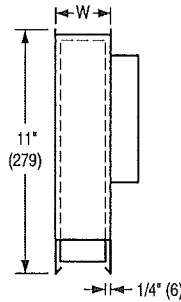
- ☒ 5350 • 1/2" (13) Slot
- ☒ 5375 • 3/4" (19) Slot
- ☒ 5310 • 1" (25) Slot
- ☒ 5315 • 1 1/2" (38) Slot

MODIFIED PERFORMANCE **MODELS:**

- ☐ 5350MP • 1/2" (13) Slot
- ☐ 5375MP • 3/4" (19) Slot
- ☐ 5310MP • 1" (25) Slot
- ☒ 5315MP • 1 1/2" (38) Slot

Hemmed Leg
Frame Types:
C, J, N

Straight Leg Frame Types:
A, B, E, F, FL, G,
H, H2, K1, K2, M, T



Nominal Length (N)		Standard Nominal Inlets (D)	
inches	mm	inches	mm
20	508	4, 5, 6, 8, 10	102, 127, 152, 203, 254
24	610		
30	762		
36	914		
48	1219	5, 8, 10, 12, 14	152, 203, 254, 305, 356
60	1524		
72	1829		

Inlets 4" thru' 8" (102 thru 203) are round and 10" thru' 14" (254 thru 356) are flat oval.

*4" (102) with optional ID Inlet Damper.

Model	No. of Slots	Plenum Width (W) For Various Frame Types							
		Imperial Units (inches)				Metric Units (mm)			
		A, B, FL, K1, K2, M, T	C, J, F, H, H2, N	E	G	A, B, FL, K1, K2, M, T	C, J, F, H, H2, N	E	G
5350	1	1 1/2	2	2 1/4	2 1/2	38	51	57	64
5375		1 3/4	2 1/4	2 1/2	2 3/4	44	57	64	70
5310		2	2 1/2	2 3/4	3	51	64	70	76
5315		2 1/2	3	3 1/4	3 1/2	64	76	83	89
5350	2	2 3/4	3 1/4	3 1/2	3 3/4	70	83	89	95
5375		3 1/4	3 3/4	3 1/2	4 1/4	83	95	102	108
5310		3 3/4	4 1/4	4 1/2	4 3/4	95	108	114	121
5315		4 3/4	5 1/4	5 1/2	5 3/4	121	133	140	146
5350	3	4	4 1/2	4 3/4	5	102	114	114	127
5375		4 3/4	5 1/4	5 1/2	5 3/4	121	133	140	146
5310		5 1/2	6	6 1/4	6 1/2	140	152	159	165
5315		7	7 1/2	7 3/4	8	178	191	197	203
5350	4	5 1/4	5 3/4	6	6 1/4	133	146	152	159
5375		6 1/4	6 3/4	7	7 1/4	159	171	178	184
5310		7 1/4	7 3/4	8	8 1/4	184	197	203	210
5315		9 1/4	9 3/4	10	10 1/4	235	248	254	260

NOTES:

- Construction: Corrosion-resistant steel.
- Nailor Series 5300 Plenums are designed specifically for field attachment to the 5000 Series Linear Slot Diffuser. They ensure optimum use of the 5000 Series VAV performance, providing a tight horizontal air pattern even at low volumes. Optional MP models incorporate integral baffles, which provide a reduction in throw and increased spread of the air pattern.
- End caps can be turned up to allow plenums to be installed on continuous runs. Simple installation with a flexible duct connection.

Project: Northside Facial Cosmetic Surgery
 Location: Alpharetta, GA
 Mech. Cont: Paulson-Cheek Mechanical
 Mech. Engineer: AHA Consulting Engineers
 Submitted by: Georgia Air Associates

OPTIONAL 5000MP
MODIFIED PLENUM

OPTIONAL
INTERNAL INSULATION

NOMINAL LENGTH - 3/8" (10)
EXCEPT FRAME T WHICH IS -
NOM. - 1" (25)

MITERED END CAP (M)
OR FLANGED END CAP (F)

NOMINAL LENGTH - 3/8" (10) -

NOMINAL LENGTH + 1/8" (3)

OPEN END (O)

NOMINAL LENGTH - 3/8" (10) -

NOMINAL LENGTH EXCEPT
FRAME T WHICH IS NOM. - 3/8" (10)

FLAT END CAP (C)

ACCESSORIES (OPTIONAL):

1a. Internal Insulation:

☒ 5350I(MP) 1/2" (13) slot

☒ 5375I(MP) 3/4" (19) slot

☒ 5310I(MP) 1" (25) slot.

☒ 5315I(MP) 1 1/2" (38) slot.

1b. ☒ FGI 1/4" (6) coated fiberglass.

☒ FFI 3/8" (10) fiber-free foam.

☒ EX External Foil Back Insulation

☒ ID Inlet Damper w/ILC

Dimensions are in inches (mm).

DATE	B SERIES	SUPERSEDES	DRAWING NO.
11 - 1 - 12	5300	6 - 21 - 11	5300-1



HVAC Submittal Cover Sheet

SECTION: 5 PRODUCT: Flexible Ductwork

Paulson-Cheek Mechanical, Inc.
6145 Norhtbelt Parkway, Suite F
Norcross, GA 30071

PHONE: 770-729-0076
FAX: 770-729-1076

PROJECT: **Northside Facial Cosmetic Surgery**

LOCATION: **Alpharetta, GA**

Paulson-Cheek Mechanical, Inc.

ARCHITECT'S/ENGINEER'S STAMP

Paulson-Cheek Mechanical, Inc.

DATE RECEIVED:	03/25/15
MANUFACTURER:	ATCO
SUPPLIER:	GAA
SUBMITTED DATE:	03/25/15

☒ NO ERRORS DETECTED

☐ CORRECT EXCEPTIONS NOTED

THIS APPROVAL OF SHOP DRAWINGS DOES
NOT RELIEVE THE SUBCONTRACTOR OR VENDOR
FROM THE REQUIREMENTS OF THE CONTRACT
DOCUMENTS.

CHECKED BY:	Mark Walden
DATE CHECKED:	03/25/15



GEORGIA AIR ASSOCIATES

SUBMITTAL

PRODUCT: FLEXIBLE DUCTWORK, ~~SPIN-IN FITTINGS,~~ PAGE: 1 OF 1
~~SADDLE FITTINGS AND LINE DAMPERS~~

MANUFACTURER: ATCO/~~JER AIR~~ FILE: _____

SPEC. PARA. NO.: MECH. DWGS. DATE: 3/23/15

PROJECT: NORTHSIDE FACIAL COSMETIC SURGERY ARCH: _____

LOCATION: ALPHARETTA, GA ENGR: AHA CONSULTING ENGINEERS

REMARKS: _____ CUST: PAULSON-CHEEK MECHANICAL

<u>QTY:</u>	<u>MODEL:</u>	<u>SIZE:</u>	<u>DESCRIPTION:</u>
200'	UPC#036-R6.0-06	6"	FLEXIBLE DUCTWORK
325'	UPC#036-R6.0-08	8"	FLEXIBLE DUCTWORK
175'	UPC#036-R6.0-10	10"	FLEXIBLE DUCTWORK
25'	UPC#036-R6.0-12	12"	FLEXIBLE DUCTWORK
20	S-3-06	6"	SPIN-IN FITTINGS W/ DAMPER (SUPPLY)
34	S-3-08	8"	SPIN-IN FITTINGS W/ DAMPER (SUPPLY)
15	S-3-10	10"	SPIN-IN FITTINGS W/ DAMPER (SUPPLY)
1	RATD-06	6"	SADDLE FITTINGS W/ DAMPER (SUPPLY)
2	RATD-08	8"	SADDLE FITTINGS W/ DAMPER (SUPPLY)
7	S-3-06	6"	SPIN-IN FITTINGS W/ DAMPER (RETURN)
13	S-3-08	8"	SPIN-IN FITTINGS W/ DAMPER (RETURN)
9	S-3-10	10"	SPIN-IN FITTINGS W/ DAMPER (RETURN)
2	S-3-12	12"	SPIN-IN FITTINGS W/ DAMPER (RETURN)
1	DS-06	6"	LINE DAMPERS (RETURN)
4	DS-08	8"	LINE DAMPERS (SUPPLY)
4	DS-10	10"	LINE DAMPERS (SUPPLY & RETURN)
1	DS-12	12"	LINE DAMPERS (RETURN)

Notes:

- 1) Flexible duct is based on 6' per runout to supply diffusers and return/transfer grilles.

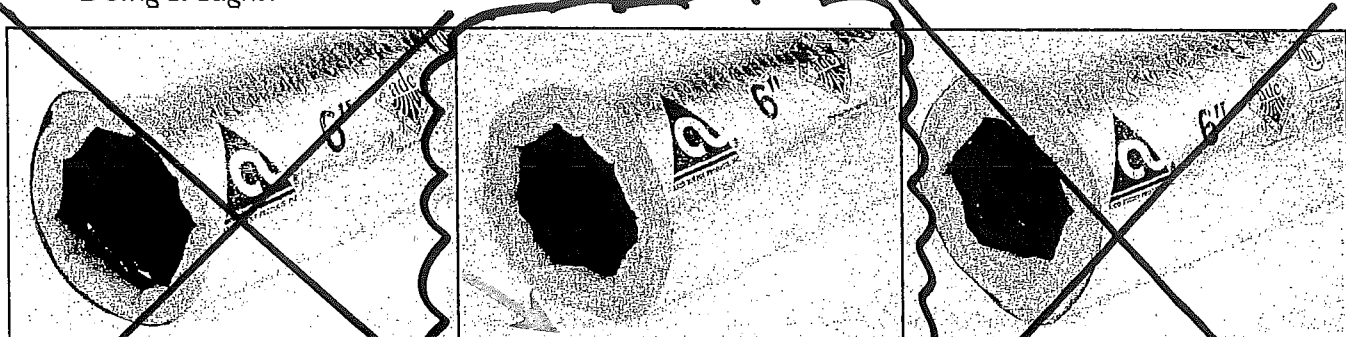


Atco. Working Together.
Doing It Right.



Flexible Duct Systems

25' Insulated
UL 181
Class 1 Air Duct



UPC #030
R-Value 4.2

UPC #036
R-Value 6.0

UPC #031
R-Value 8.0

All thermal performance (R-Values) are classified by Underwriters Laboratories in accordance with ADC Flexible Duct Performance and Installation Standard (1991) using ASTM C-518 (1991), at installed wall thickness, on flat insulation only.

Description

ATCO #030, 036, and 031 are UL 181, Class 1 Air Ducts and are manufactured with a tri-directional fiberglass scrim reinforced, metallized polyester outer jacket. The inner core of all three products is air-tight and designed for low-to-medium operating pressures in HVAC systems. ATCO #036 and 031 have increased insulation for superior thermal performance.

Construction

A double lamination of tough polyester which encapsulates a steel wire helix forms the air-tight inner core of the ATCO #030, 036, and 031. The double-layer core of each product is wrapped in multiple thicknesses of fiberglass insulation. All three products are sheathed in a rugged and durable tri-directionally reinforced, metallized polyester jacket.

FEATURES & BENEFITS

- Air-tight Inner Core** - Energy efficient / No fiberglass erosion into air stream.
- Encapsulated Wire Helix** - No unraveling when cut to length / Quick installation
- Smooth Inner Core** - Low friction loss / Low operating cost.
- Thick Blanket of Fiberglass Insulation** - Energy efficient / Excellent thermal characteristics
- Tough Reinforced Metallized Polyester Jacket** - Tear and puncture resistant / Low maintenance.
- Lightweight Compact Carton** - Reduces warehouse and Jobsite handling cost.

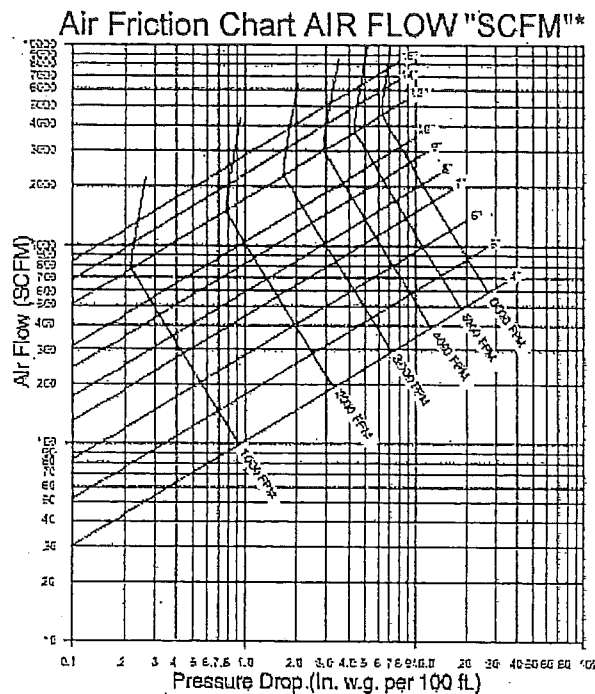
APPLICATIONS & CODE COMPLIANCES*

ATCO #030, 036, and 031 are designed for indoor use as a supply and return air duct in residential and commercial low-to-medium pressure heating and air conditioning systems. All three models can be used as a complete air duct system and/or a branch duct connecting to mixing boxes, diffusers, light troffers, room inlets, or other terminal devices. UL 181, NFPA 90A & 90B, IMC, IRC, UMC 10-1, HUD 515-2.1 (b), Cities of Chicago, New York, San Francisco, County of Dade (Florida), California State Fire Marshal.*

*ATCO recommends that you check with the local code body having jurisdiction in your area to determine applicable codes.



PRODUCT & PERFORMANCE DATA



PRODUCT DATA

- Length: 25', 50' (Other lengths available as special order)
- Diameter: 3", 4", 5", 6", 7", 8", 9", 10", 12", 14", 16", 18", 20", 22"
- Vapor Barrier: Tri-directional, scrim reinforced metallized polyester
- End Treatment: 25', 50' -plain ends
- Packaging: 1 piece per carton

INSTALLATION

Air duct connections and joints shall be made per installation instructions outlined by ATCO Rubber Products, Inc. and as required by the UL 181 listing procedure.

(Installation instructions are included inside each carton.)

STRAIGHT RUN

* FD 72-R1 Test Code of the Air Diffusion Council. Friction loss is computed in inches of water gauge per 100 ft. of duct. By using CFM or FPM values for a given duct dimension, the friction loss can be determined. Conversion of CFM to FPM also can be made.



PERFORMANCE DATA



UPC #030
R-Value 4.2

UPC #036
R-Value 6.0

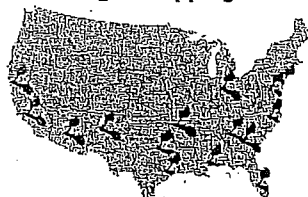
UPC #031
R-Value 8.0

- Rated Positive Pressure: 10" w.g. per UL-181 (UL Listed pressure) ratings are determined in straight lengths @ ambient temperatures.)
- Recommended Operating Pressures: (Determined in a 90° bend at elevated temperatures in accordance with ADC FD 72-R1 Test Code.)
 - Maximum Positive:
 - 6" w.g. - 4" thru 12" Dia.
 - 4" w.g. - 14" thru 20" Dia.
 - (With factory installed metal collars, 2" w.g. - all diameters)
 - Maximum Negative: 3/4" w.g. - all diameters
 - Maximum Velocity: 5,000 FPM
- Vapor Transmission: .05 perms
- Maximum Operating Temperatures:
 - 20°F to 140°F Continuous (@ maximum pressure)
 - 20°F to 180°F Continuous (@ 2" pos. w.g. max.)
 - 20°F to 250°F Intermittent (@ 1/2" pos. w.g. max.)
- Flame Spread: 25 max
- Smoke Developed: 50 max



Warranty - ATCO warrants that all flexible ducts will be free from defects in material and workmanship for a period of five years from the date of purchase only if the ducts are installed in accordance with ATCO's installation instructions and under conditions specified in ATCO's performance data. The buyer's exclusive remedies for any defect in the flexible ducts shall be replacement or refund of the purchase price, at ATCO's option. ATCO MAKES NO OTHER WARRANTIES, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE. IN PARTICULAR, ATCO MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ATCO SHALL HAVE NO LIABILITY TO THE BUYER OR ANY THIRD PARTY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, PERSONAL INJURY, PROPERTY DAMAGE, LOST PROFITS OR OTHER ECONOMIC INJURY DUE TO ANY DEFECT IN THE FLEXIBLE DUCTS. MATERIALS AND SPECIFICATIONS FOR THE FLEXIBLE DUCTS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Manufacturing & Shipping Locations



Albuquerque, NM • Baltimore, MD • Cartersville, GA • Fort Worth, TX
Greensboro, NC • Houston, TX • Indianapolis, IN • Phoenix, AZ
Plainville, GA • Plant City, FL • Riverside, CA • Wiggins, MS
Sacramento, CA • Springdale, AR • Vineland, NJ

ATCO RUBBER PRODUCTS, INC.

CORPORATE HEADQUARTERS
7101 ATCO DRIVE
FORT WORTH, TEXAS 76118-7098
PHONE: (817) 595-2894
1-800-USS-DUCT (1-800-877-3828)
FAX: 1-800-366-3539 TELEX: 758-510
www.atcoflex.com



HVAC Submittal Cover Sheet

SECTION: 6

PRODUCT: Spin-In Dampers, Saddle Fittings, & Line Dampers

Paulson-Cheek Mechanical, Inc.
6145 Norhtbelt Parkway, Suite F
Norcross, GA 30071

PHONE: 770-729-0076
FAX: 770-729-1076

PROJECT: **Northside Facial Cosmetic Surgery**

LOCATION: **Alpharetta, GA**

Paulson-Cheek Mechanical, Inc.

ARCHITECT'S/ENGINEER'S STAMP

Paulson-Cheek Mechanical, Inc.

DATE RECEIVED:	03/25/15
MANUFACTURER:	Jer-Air
SUPPLIER:	GAA
SUBMITTED DATE:	03/25/15

☒ NO ERRORS DETECTED

☐ CORRECT EXCEPTIONS NOTED

THIS APPROVAL OF SHOP DRAWINGS DOES
NOT RELIEVE THE SUBCONTRACTOR OR VENDOR
FROM THE REQUIREMENTS OF THE CONTRACT
DOCUMENTS.

CHECKED BY:	Mark Walden
DATE CHECKED:	03/25/15



GEORGIA AIR ASSOCIATES

SUBMITTAL

PRODUCT: ~~FLEXIBLE DUCTWORK~~, SPIN-IN FITTINGS, PAGE: 1 OF 1
SADDLE FITTINGS AND LINE DAMPERS

MANUFACTURER: ~~ATCO~~/JER-AIR FILE: _____

SPEC. PARA. NO.: MECH. DWGS. DATE: 3/23/15

PROJECT: NORTHSIDE FACIAL COSMETIC SURGERY ARCH: _____

LOCATION: ALPHARETTA, GA ENGR: AHA CONSULTING ENGINEERS

REMARKS: _____ CUST: PAULSON-CHEEK MECHANICAL

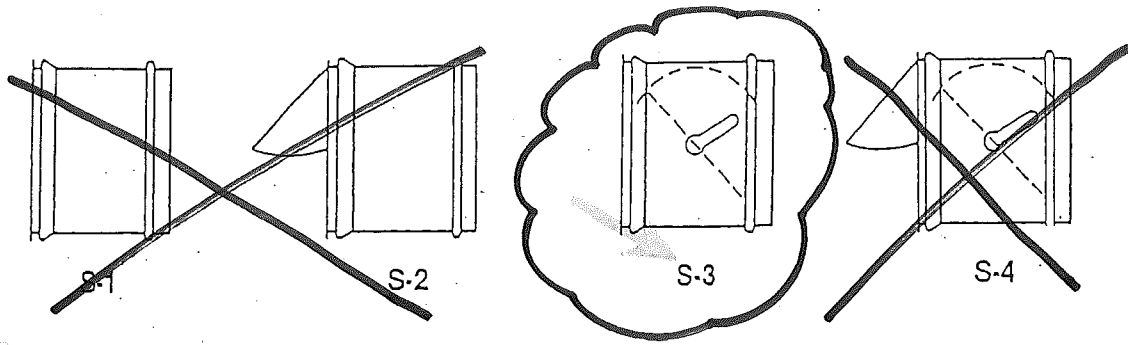
<u>QTY:</u>	<u>MODEL:</u>	<u>SIZE:</u>	<u>DESCRIPTION:</u>
200'	UPC#036-R6.0-06	6"	FLEXIBLE DUCTWORK
325'	UPC#036-R6.0-08	8"	FLEXIBLE DUCTWORK
175'	UPC#036-R6.0-10	10"	FLEXIBLE DUCTWORK
25'	UPC#036-R6.0-12	12"	FLEXIBLE DUCTWORK
20	S-3-06	6"	SPIN-IN FITTINGS W/ DAMPER (SUPPLY)
34	S-3-08	8"	SPIN-IN FITTINGS W/ DAMPER (SUPPLY)
15	S-3-10	10"	SPIN-IN FITTINGS W/ DAMPER (SUPPLY)
1	RATD-06	6"	SADDLE FITTINGS W/ DAMPER (SUPPLY)
2	RATD-08	8"	SADDLE FITTINGS W/ DAMPER (SUPPLY)
7	S-3-06	6"	SPIN-IN FITTINGS W/ DAMPER (RETURN)
13	S-3-08	8"	SPIN-IN FITTINGS W/ DAMPER (RETURN)
9	S-3-10	10"	SPIN-IN FITTINGS W/ DAMPER (RETURN)
2	S-3-12	12"	SPIN-IN FITTINGS W/ DAMPER (RETURN)
1	DS-06	6"	LINE DAMPERS (RETURN)
4	DS-08	8"	LINE DAMPERS (SUPPLY)
4	DS-10	10"	LINE DAMPERS (SUPPLY & RETURN)
1	DS-12	12"	LINE DAMPERS (RETURN)

Notes:

~~1) Flexible duct is based on 6' per runout to supply diffusers and return/transfer grilles.~~

SPIN-IN TAKE OFFS

FOR USE WITH GALVANIZED TRUNK DUCT



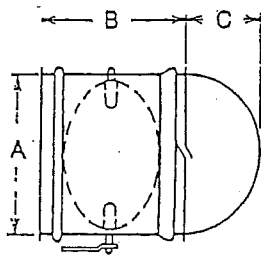
STANDARD FEATURES:

~~45° Scoop~~

- Sizes 4" thru 12" constructed with 28 gage galvanized steel
- Sizes 14" thru 20" constructed with 26 gage galvanized steel
- Factory assembled adjustable damper hardware
- Barrel exit beaded
- Riveted construction
- Barrel length
 - 4" thru 7" — 6" long
 - 8" thru 10" — 8" long
 - 12" thru 20" — 12" long

~~ALSO AVAILABLE UPON REQUEST~~

- ~~• 90° Scoop~~
- ~~• 26 gage construction~~



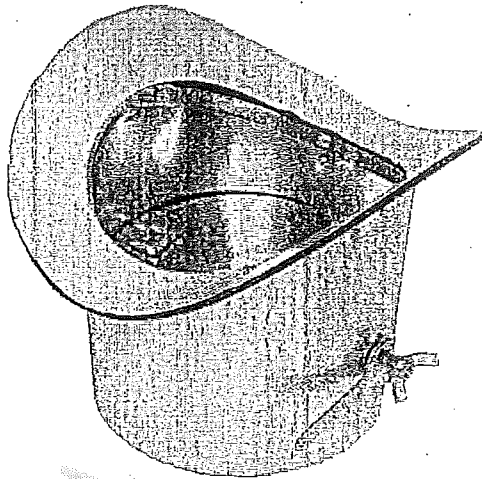
ORDER SIZE	A	B	C	CUT HOLE
4	3-7/8	5-5/8	2-1/2	3-7/8
5	4-7/8	5-5/8	3	4-7/8
6	5-7/8	5-5/8	3-1/2	5-7/8
7	6-7/8	5-5/8	4	6-7/8
8	7-7/8	9-5/8	4-1/2	7-7/8
9	8-7/8	9-5/8	5	8-7/8
10	9-7/8	9-5/8	5-1/2	9-7/8
12	11-7/8	11-5/8	6-1/2	11-7/8
14	13-7/8	11-5/8	7-1/2	13-7/8
16	15-7/8	11-5/8	8-1/2	15-7/8
18	17-7/8	11-5/8	9-1/2	17-7/8
20	19-7/8	11-5/8	10-1/2	19-7/8

Project: Northside Facial Cosmetic Surgery
 Location: Alpharetta, GA
 Mech. Cont: Paulson-Cheek Mechanical
 Mech. Engineer: AHA Consulting Engineers
 Submitted by: Georgia Air Associates

Jer-Air Manufacturing, Inc.

P.O. BOX 656 • MCINTOSH, FL 32665 • PHONE 1-(904)-591-2674
 JERRY PHILMAN FAX NO. 1-(904)-591-3241

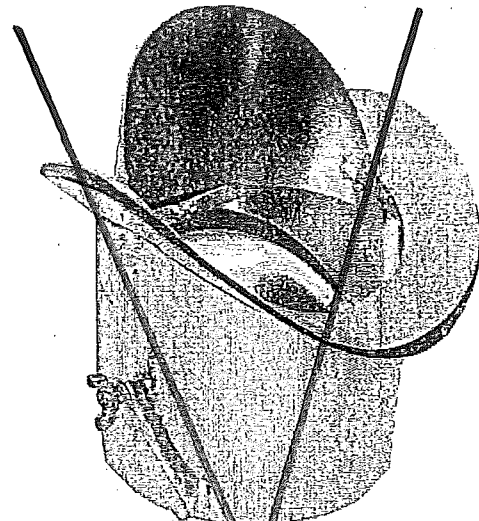
SHEET METAL FITTINGS



RATD
Round Airtight Stick Ons
for Round Pipe with Damper

AVAILABLE SIZES

6"
8"
10"
12"
14"



RATOS
Round Airtight Stick Ons
for Round Pipe with Scoop & Damper

AVAILABLE SIZES

6"
8"
10"
12"

Project: Northside Facial Cosmetic Surgery
Location: Alpharetta, GA
Mech. Cont: Paulson-Cheek Mechanical
Mech. Engineer: AHA Consulting Engineers
Submitted by: Georgia Air Associates

Jer-Air Manufacturing, Inc.

P.O. BOX 656 • MCINTOSH, FL 32665 • PHONE 1-(904)-591-2674
JERRY PHILMAN FAX NO. 1-(904)-591-3241

(5-1-2010)



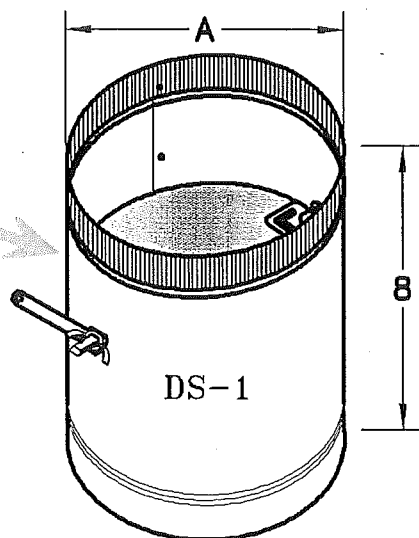
GEORGIA AIR ASSOCIATES



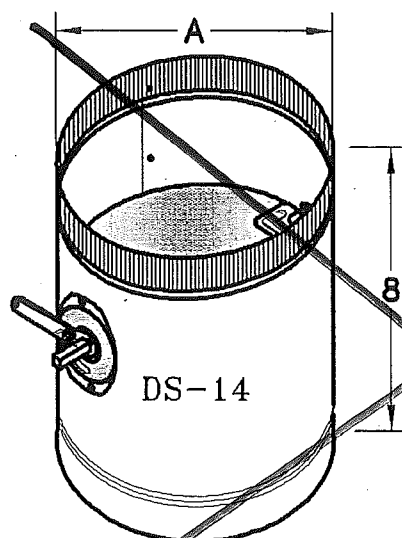
MODEL #

DS

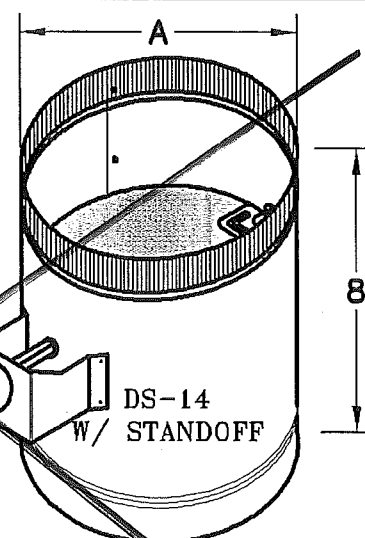
DESCRIPTION:
DAMPER SECTIONS
(LIGHT GAUGE)



DS-1



DS-14



DS-14
W/ STANDOFF

1/4" HARDWARE

WITH 2" STANDOFF
QUADRANT AND 1/4"
HARDWARE

PRODUCT NOTES:

DAMPER SECTION FITTINGS ARE
CONSTRUCTED OF GALVANIZED SHEET
METAL OF LOCK FORMING AND ROLL
FORMING QUALITY WITH RIVETED
CONSTRUCTION.

BARREL EXIT IS BEADED AND CRIMPED.

DAMPER BLADE CAN BE CONSTRUCTED
WITH 28, 26, 24 OR 22 GAUGE
MATERIAL.

FACTORY ASSEMBLED DAMPER HARDWARE.

WITH OR WITHOUT 2" STANDOFF
QUADRANT WITH 1/4" AXLE SHAFT.

SIZES AVAILABLE:

A

4"
5"
6"
7"
8"
9"
10"
12"
14"
16"
18"

Project: Northside Facial Cosmetic Surgery

Location: Alpharetta, GA

Mech. Cont: Paulson-Cheek Mechanical

Mech. Engineer: AHA Consulting Engineers

Submitted by: Georgia Air Associates



HVAC Submittal Cover Sheet

SECTION: 7 PRODUCT: Fire Dampers

Paulson-Cheek Mechanical, Inc.
6145 Norhtbelt Parkway, Suite F
Norcross, GA 30071

PHONE: 770-729-0076
FAX: 770-729-1076

PROJECT: **Northside Facial Cosmetic Surgery**

LOCATION: **Alpharetta, GA**

Paulson-Cheek Mechanical, Inc.

ARCHITECT'S/ENGINEER'S STAMP

Paulson-Cheek Mechanical, Inc.

DATE RECEIVED: 03/25/15
MANUFACTURER: Nailor Industries
SUPPLIER: GAA
SUBMITTED DATE: 03/25/15

☒ NO ERRORS DETECTED

☐ CORRECT EXCEPTIONS NOTED

THIS APPROVAL OF SHOP DRAWINGS DOES
NOT RELIEVE THE SUBCONTRACTOR OR VENDOR
FROM THE REQUIREMENTS OF THE CONTRACT
DOCUMENTS.

CHECKED BY: Mark Walden
DATE CHECKED: 03/25/15



SUBMITTAL

PRODUCT: FIRE DAMPERS PAGE: 1 OF 1

MANUFACTURER: NAILOR INDUSTRIES FILE:

SPEC. PARA. NO.: MECH. DWGS. DATE: 3/23/15

PROJECT: <u>NORTHSIDE FACIAL COSMETIC SURGERY</u>	ARCH: <u></u>
LOCATION: <u>ALPHARETTA, GA</u>	ENGR: <u>AHA CONSULTING ENGINEERS</u>
REMARKS: <u></u>	CUST: <u>PAULSON-CHEEK MECHANICAL</u>

[illegible]



STATIC INTEGRAL SLEEVE CURTAIN TYPE FIRE DAMPERS

1 1/2 HR. LABEL • VERT. OR HORIZ. MOUNT
FOR USE IN STATIC SYSTEMS

MODELS: ~~0114X-1X~~, 0124X-1X AND 0134X-1X



QUALIFICATIONS:

- UL 555 & CAN/ULC-S112 CLASSIFIED FIRE DAMPER. 1 1/2 hr. label (File # R9492).
- Meets all the requirements of UL and NFPA 80, 90A and 101 for fire dampers in static HVAC systems, as well as IBC and NBC (Canada) Building Code requirements.
- City of New York Board of Standards and Appeals. Cal. No. 460-88-SA.
- California State Fire Marshal: Fire Damper Listing No. 3225-0935:0100.

Model Series 01X4 Integral Sleeve Static Curtain Fire Dampers ensure proper damper mounting in sleeve and can be shipped direct to job site for immediate installation, eliminating costly and inconvenient shop handling. UL approved for use where building codes require protection of HVAC ductwork penetrations in walls, partitions or floors that have a fire resistance rating of 2 hours or less. All units are constructed with 22 ga. (0.85) roll-formed G60 galvanized steel integral sleeve available in 12" (305), 14" (356) or 16" (406) length. Optional 'Quick-Set' retaining angles are available to complete the installation package.

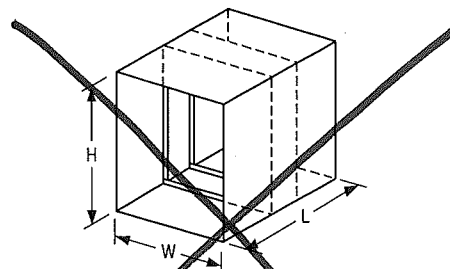
STANDARD CONSTRUCTION:

- Integral Sleeve/Frame:** 22 ga. (0.85) roll-formed G60 galvanized steel.
01 x 4X - 12 Length 12" (305)
~~01 x 4X - 14 Length 14" (356)~~
~~01 x 4X - 16 Length 16" (406)~~
- Blades:** Curtain type interlocking blades, 22 ga. (0.85) roll-formed G60 galvanized steel.
- Fusible Link:** 165°F (74°C) standard. UL Listed.
212°F (100°C) available.
- Blade Closure:** Vertical mount model; gravity.
Horizontal mount models are equipped with stainless steel closure springs and galvanized steel locking ramps.

OPTIONS:

- ☐ Non standard temperature fusible link. Specify _____
- ☒ **QS1** Quick set retaining angles (single set).
- ☒ **QS2** Quick-set retaining angles (pair).
- ☐ ~~Removable clip and drive connection (Type A and B only):~~
- ☒ **HM2** (both ends). ☐ **HM1** (one end).
- ☐ ~~PT Pull Tab Release. Permits simple reset of horizontal damper when access door is located below damper. (See dwg. ACC PTR for details).~~

Project: Northside Facial Cosmetic Surgery
Location: Alpharetta, GA
Mech. Cont: Paulson-Cheek Mechanical
Mech. Engineer: AHA Consulting Engineers
Submitted by: Georgia Air Associates

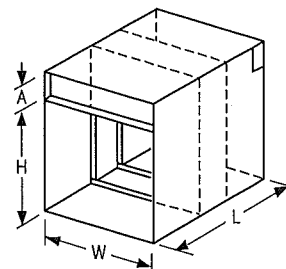


Models: 0114V-1X Vertical &
0114H-1X Horizontal

Type A - Blades and frame in the airstream.

Min. size - 4" x 4" (102 x 102)

Max. size - 48" x 48" (1219 x 1219)



Models: 0124V-1X Vertical & 0124H-1X Horiz.

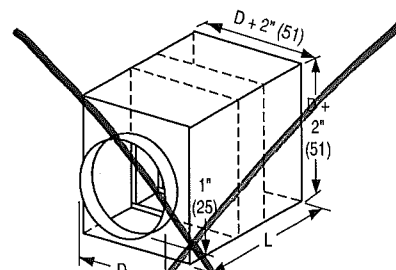
Type B - Blades out of airstream.

Min. size - Vertical 4" x 3" (102 x 76)

Min. size - Horizontal 4" x 4" (102 x 102)

Max. size - V or H 48" x 43" (1219 x 1092)

Damper Height (H)	Dim. 'A'
5" thru 17" (127 thru 432)	2" (51)
18" thru 21" (457 thru 533)	3" (76)
28" thru 36" (711 thru 914)	4" (102)
37" thru 43" (940 thru 1092)	5" (127)



Models: 0134V-1X Vertical & 0134H-1X Horiz.

Type CP - Round transition collars.

Blades partially in airstream

Min. size - Vertical 3" dia. (76)

Min. size - Horizontal 4" dia. (102)

Max. size - V or H 42" dia. (1067)

Dimensions are in inches (mm).

DATE	B SERIES	SUPERSEDES	DRAWING NO.
4 - 28 - 14	FD	2 - 18 - 05	0100-5



"QUICK-SET" RETAINING ANGLES FOR ALL SLEEVED FIRE AND COMBINATION FIRE/SMOKE DAMPERS MODELS: ~~QS1 AND QS2~~

**"QUICK-SET" RETAINING ANGLES BOTH SIMPLIFY AND SPEED INSTALLATION,
SAVING BOTH TIME AND MONEY.**

BENEFITS:

- One piece angles are fastened together in the corners. Only two sets of angles to handle per damper (rather than four separate angles per side).
- Angles are shipped with damper - no sorting or matching.
- Provided with pre-drilled fastening holes on 2" (51) centers to ensure correct angle/sleeve attachment.
- Factory fabricated by Nailor to suit the individual fire damper.
- Reduced cost when compared to conventional retaining angles.
- Dampers can ship directly to the job site complete with all necessary installation sheet metal hardware (saves on double handling at contractor's shop).
- Help ensure a correct installation as per U.L. approved installation instructions.

The majority of installing contractors view fire damper installation as a costly time consuming and troublesome procedure. Eight conventional angles must be custom fabricated for each damper either in a sheet metal shop or at the job site and sized to suit each individual damper. Invariably, they are mislaid or lost and must be matched to each factory supplied damper.

The Nailor "Quick-Set" solution solves the majority of problems. They are pre-formed to fit and ship with the individual damper for ultimate convenience. "Quick-Set" angles are supplied with correctly spaced pre-drilled screw-holes to ensure a quick, easy and accurate installation for all integral sleeve Nailor fire and combination fire/smoke dampers - no measuring required.

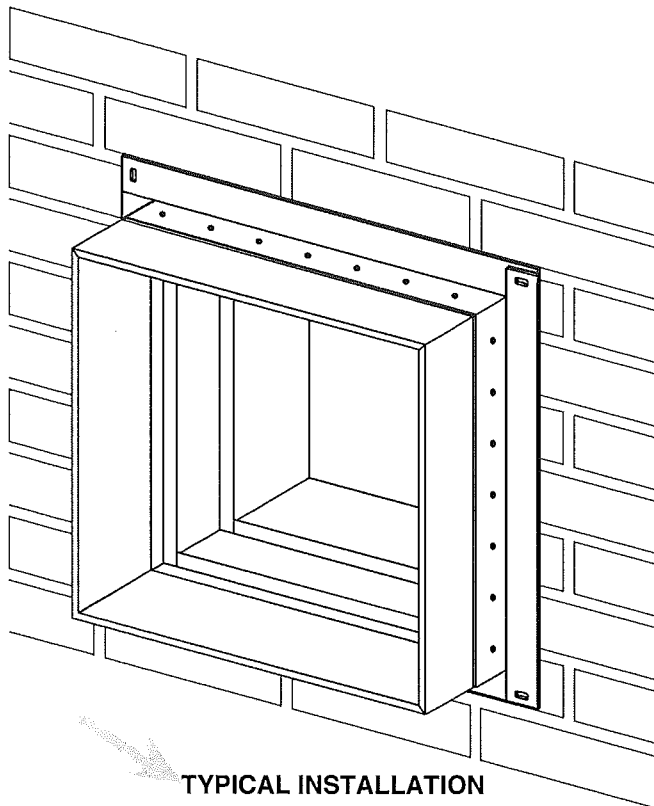
"Quick-Set" retaining angles provide the "complete" installation package. Simple, fast, convenient.

MODELS:

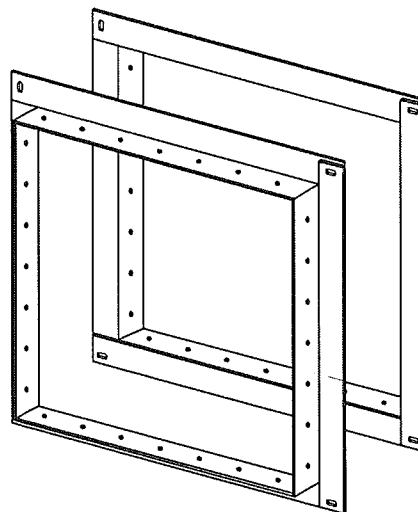
Nailor "Quick-Set" retaining angles are an accessory option for all dampers ordered with factory sleeves.

QS2: Two sides (pair). For standard installations where angles are installed on both sides of the fire partition.

QS1: One side (single set). For use in single side retaining angle installations and with grille mount and "out of wall" damper models.



TYPICAL INSTALLATION



**TYPICAL PAIR OF PRE-ASSEMBLED
QUICK-SET' RETAINING ANGLES**



Refer to the UL or ULC
Classification marking
the product.

Project: Northside Facial Cosmetic Surgery

Location: Alpharetta, GA

Mech. Cont: Paulson-Cheek Mechanical

Mech. Engineer: AHA Consulting Engineers

Submitted by: Georgia Air Associates

Page 1 of 2

Dimensions are in inches (mm).

DATE	B SERIES	SUPERSEDES	DRAWING NO.
2 - 26 - 09	FD-ACC	6 - 5 - 03	QSRA



HVAC Submittal Cover Sheet

SECTION: 8

PRODUCT: Motor Operated Dampers

Paulson-Cheek Mechanical, Inc.
6145 Norhtbelt Parkway, Suite F
Norcross, GA 30071

PHONE: 770-729-0076
FAX: 770-729-1076

PROJECT: **Northside Facial Cosmetic Surgery**

LOCATION: **Alpharetta, GA**

Paulson-Cheek Mechanical, Inc.

ARCHITECT'S/ENGINEER'S STAMP

Paulson-Cheek Mechanical, Inc.

DATE RECEIVED: 03/25/15
MANUFACTURER: United Enertech
SUPPLIER: GAA
SUBMITTED DATE: 03/25/15

☒ NO ERRORS DETECTED

☐ CORRECT EXCEPTIONS NOTED

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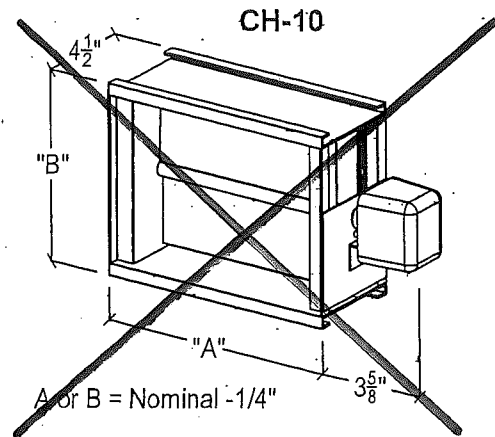
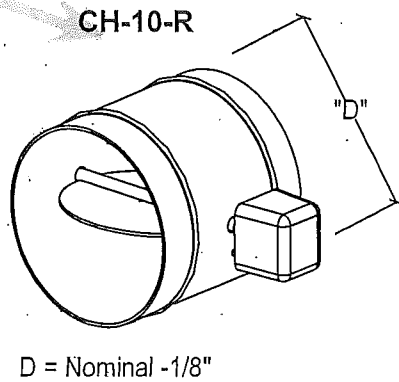
CHECKED BY: Mark Walden
DATE CHECKED: 03/25/15



PRODUCT: MOTOR OPERATED DAMPERS PAGE: 1 OF 1
MANUFACTURER: UNITED ENERTECH FILE: _____
SPEC. PARA. NO.: MECH. DWGS. DATE: 3/23/15

PROJECT: <u>NORTHSIDE FACIAL COSMETIC SURGERY</u>	ARCH: <u></u>
LOCATION: <u>ALPHARETTA, GA</u>	ENGR: <u>AHA CONSULTING ENGINEERS</u>
REMARKS: <u></u>	CUST: <u>PAULSON-CHEEK MECHANICAL</u>

21



The Model CH-10 was developed in response to retrofit bathroom (restroom) in high rise hotels, office buildings, and apartment buildings. The units are powered by a direct couple spring return actuator. Also recommended for new construction, exhaust, intake, and on-off zone control.

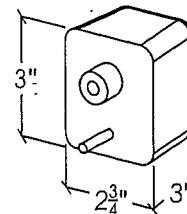
SIZES AVAILABLE:

thru 24" x 12" Rectangular

6", 8", 10", 12" Round

(Available in 24 or 115 VAC)

Consult Factory for other sizes
Such as 16x6, 12x8, etc...



Note: cycle tested and
manufactured in the USA.

Round (Standard Features)

- Galvanized Steel Blade
- 20 ga Galvanized Steel Body
- 24 ga. Galvanized Steel Blade
- 8" Body Length
- Low Leakage Gasket
- Bronze Oilite Bushing

24 VAC 60 Hz 32 Amp 5 W
110 VAC 50/60 Hz 6W/5W

~~Rectangular (Standard Features)~~

- .081 Extruded Aluminum Frame
- .100 Extruded Aluminum Blade
- Low Leakage Gasket
- Bronze Oilite Bushing

Project: Northside Facial Cosmetic Surgery
Location: Alpharetta, GA
Mech. Cont: Paulson-Cheek Mechanical
Mech. Engineer: AHA Consulting Engineers
Submitted by: Georgia Air Associates

☐ ~~MODEL CH-10 (Rectangular)~~

☒ MODEL CH-10-R (Round)

DRAWN BY:

CLJ

DATE:

1-24-00

REV. DATE:

1-25-11

REV. NO.

19

APPROVED BY:

SDC

DWG. NO.:

G-2



Hansen Corporation
a Allineba Group Company

100 Years and Counting...

Series 135-6 Spring Return Actuator

STANDARD FEATURES:

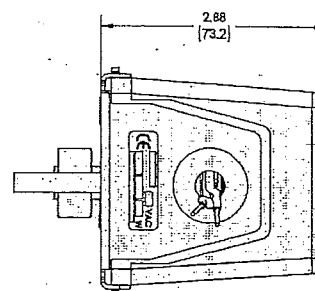
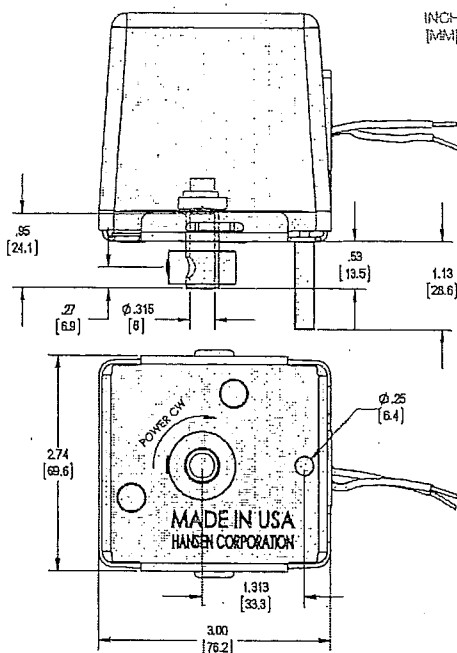
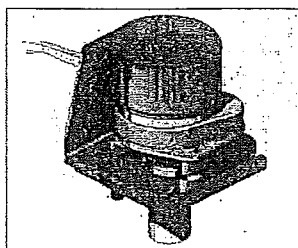
- Actuator Mounting: Set-screw clamping to 5/16 inch diameter damper shaft and anti-rotation pin as shown
- Actuator Rotational Travel: 90 degrees (open to close position)
- Actuator Electrical Connection: Two wire, single phase

OPTIONAL FEATURES:

- Alternate springs for higher or lower return forces
- Alternate gear ratios for faster/slower actuation times
- Available with soft finish spring for maximizing life in low friction applications or strong return spring for higher friction applications
- Available in 50 or 60Hz

TYPICAL APPLICATIONS:

- HVAC Dampers
- Material Dispensing



PERFORMANCE

ORDER NUMBER	VOLTS	POWER	FINISH	ROTATION	POWER	POWER	POWER	POWER	POWER
	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT	INPUT
	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE
135-6416	24/60	6	CW	90	45	30	45	15	8
135-6616	120/60	6	CW	90	45	30	45	15	8

Hansen Corporation
901 South First Street
Princeton, IN 47670-2369

Tel: (812) 385-3415
Fax: (812) 385-3013

hansen-motor.com

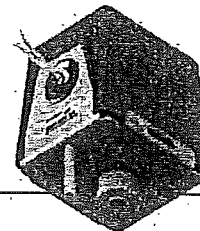
PAGE 1 OF 2

Series 135-6
Spring Return Actuator

Series 135-6

Spring Return Actuator

Continued



Series 135
Part Numbering
Example

135- 

Wattage:

AC: 4 = 4W | 5 = 5W | 6 = 6W

Open Speed/Travel Options:

1 = 90° IN 30 Seconds
2 = 90° IN 22.5 Seconds
3 = 90° IN 15 Seconds

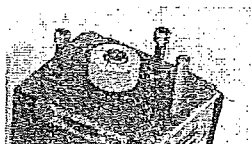
Rated Voltage

3 = 24VAC/50 Hz | 4 = 24VAC/60 Hz | 5 = 120VAC/50 Hz
6 = 120VAC/60 Hz | 7 = 240VAC/50 Hz | 8 = 240VAC/60 Hz

Motor Type

6 = Spring Return

Custom Shafts



Project: Northside Facial Cosmetic Surgery
Location: Alpharetta, GA
Mech. Cont: Paulson-Cheek Mechanical
Mech. Engineer: AHA Consulting Engineers
Submitted by: Georgia Air Associates



HVAC Submittal Cover Sheet

SECTION: 9 PRODUCT: Wall Louvers

Paulson-Cheek Mechanical, Inc.
6145 Norhtbelt Parkway, Suite F
Norcross, GA 30071

PHONE: 770-729-0076
FAX: 770-729-1076

PROJECT: **Northside Facial Cosmetic Surgery**

LOCATION: **Alpharetta, GA**

Paulson-Cheek Mechanical, Inc.

ARCHITECT'S/ENGINEER'S STAMP

Paulson-Cheek Mechanical, Inc.

DATE RECEIVED: 03/25/15
MANUFACTURER: United Enertech
SUPPLIER: GAA
SUBMITTED DATE: 03/25/15

☒ NO ERRORS DETECTED

☐ CORRECT EXCEPTIONS NOTED

THIS APPROVAL OF SHOP DRAWINGS DOES
NOT RELIEVE THE SUBCONTRACTOR OR VENDOR
FROM THE REQUIREMENTS OF THE CONTRACT
DOCUMENTS.

CHECKED BY: Mark Walden
DATE CHECKED: 03/25/15



SUBMITTAL

PRODUCT: WALL LOUVERS

PAGE: 1 OF 1

MANUFACTURER: UNITED ENERTECH

FILE:

SPEC. PARA. NO.: MECH. DWGS.

DATE: 3/23/15

PROJECT: NORTHSIDE FACIAL COSMETIC SURGERY

ARCH:

LOCATION: ALPHARETTA, GA

ENGR: AHA CONSULTING ENGINEERS

REMARKS:

CUST: PAULSON-CHEEK MECHANICAL

[illegible]

NOTES :

- 1) LOUVERS ARE UNDERSIZED BY 1/8" IN BOTH DIMENSIONS.
- 2) LOUVERS ARE SUBMITTED WITH STANDARD MILL FINISH.

SUBMITTAL DATA

MODEL FL-D-4

HIGH PERFORMANCE 4" FIXED LOUVER

STANDARD CONSTRUCTION:

Frame: .081 Extruded Aluminum, 4.19" Deep

Blade: .081 Extruded Aluminum positioned on a 37° angle on approximately 2.88" centers

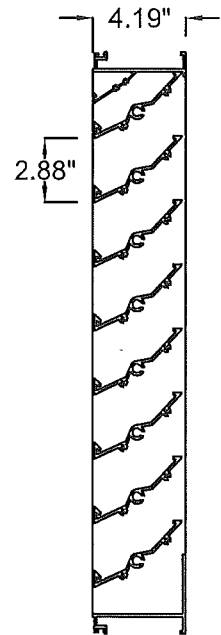
Birdscreen: .75" x .051" Flattened Aluminum in removable frame. Screen is mounted as standard on inside (rear) as looking from exterior of building.

Finish: Mill Aluminum (Std.)

Minimum Size: 12 x 12

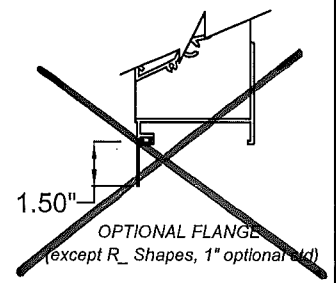
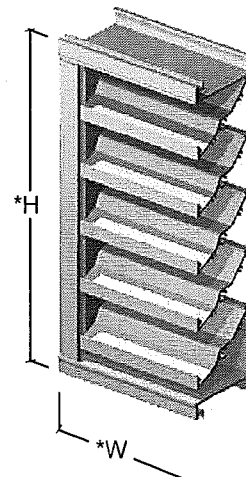
Maximum Single Section: 120"w x 84"h or 84"w x 120"h

Note: 10' max width



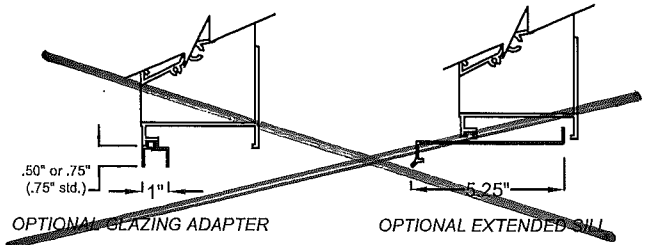
OPTIONS:

- ☐ Flanged Frame (1.50" std.), (1" std for shapes R_)
- ☐ Custom Flange (1", 2", or 3"), (1.5", 2", or 3" for shapes R_)
- ☐ Extended Sill
- ☐ Glazing Adapter (.50" or .75")
- ☐ Insect Screen (Other Screens Available, See Screen Page)
- ☐ Filter Racks (no screen)
- ☐ Security Bars
- ☐ Hinged Sub Frame
- ☐ Split Deflection 45°/0° Blades
- ☐ Welded Construction (Wind Load +/- 50 psf)
- ☐ .125" Construction
- ☐ Blank-off, Alum., non-insulated, no screen, non-removable
- ☐ Blank-off, Alum., non-insulated, with bird screen or insect screen
- ☐ Blank-off, Alum., insulated double wall, with bird screen, removable
- ☐ Blank-off, Alum., insulated double wall, no screen, non-removable



AVAILABLE FINISHES:

- ☐ Powder Polyester TGIC (2 coats) baked on at 410°F, 2.5 to 3.5 mils Meets AAMA-2605 Standards
- ☐ Powder Super durable polyester (2 coats) baked on at 410°F, 2.5 to 3.5 mils Meets AAMA-2604-05 Standards
- ☐ Acrylic baked enamel (ACRA-BOND® ULTRA) by AkzoNobel baked on at 350°F, 0.8 to 1.2 mils dry Meets AAMA-2603 Standards
- ☐ Kynar® (ALUM*A*STAR®) 2 coats by AkzoNobel baked on at 450°F, 1.2 to 1.6 mils dry Meets AAMA-2604-05 Standards
- ☐ Kynar 500® or HYLAR® 5000 70% TRINAR® (2 coats) by AkzoNobel baked on at 450°F, 1.2 to 1.6 mils dry, Meets AAMA-2605-05 Standards
- ☐ Kynar 500® or HYLAR® 5000 (70% Tri-Escent II) (2 coats) by AkzoNobel, a superior finish to other metallic or anodized finishes. A blend of mica, ceramic, and inorganic pigments creates subtle yet dazzling design that goes beyond metallic color without the requirement of a clear coat. 14 standard colors - custom colors available. Baked on at 415°F, 1.4 to 1.8 mils dry, meets AAMA 2605-05.
- ☐ Clear Anodize 204 R-1 Class II (AA-C22A31)(0.4 to 0.7 mil)
- ☐ Clear Anodize 215 R-1 Class I (AA-C22A41)(>0.7 mil)
- ☐ Integral Color Anodize (AA-C22A42)(>0.7 mil)
 - Clear coat available for all above finishes.
 - Hylar® 5000 is a registered trademark of Solvay Solexis, Inc.
 - Kynar® 500 is a registered trademark of Arkema.
 - ALUM*A*STAR® 50 and TRINAR® are registered trademarks of AkzoNobel
 - ACRA-BOND® ULTRA is a registered trademark of AkzoNobel



*Width and Height dimensions are approximately 1/4" under listed size.

Due to continuing research, United Enertech reserves the right to change specifications without notice.



3005 South Hickory Street
Chattanooga, Tennessee 37407
Tel: (423) 698-7715
Fax: (423) 698-6629
www.unitedenertech.com

MODEL FL-D-4 (Drainable Blade w/ Jamb Gutters & Downspouts)

DRAWN BY: CLJ	DATE: April 2010	REV. DATE: February 2010	REV. NO. 1	APPROVED BY: BGT	DWG. NO.: A-2
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SUGGESTED SPECIFICATION

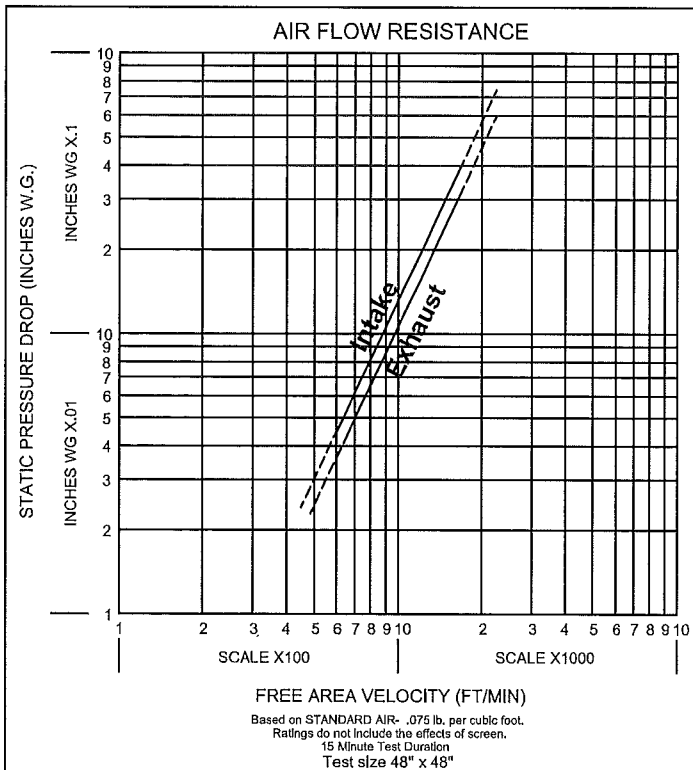
Furnish and install louvers as hereinafter specified where shown on plans or as described in schedules. Louvers shall be stationary drainable type with drain gutters in each blade and downspouts in jambs and mullions. Stationary drainable blades shall be contained within a 4.19" frame. Louver components (heads, jambs, sills, blades, and mullions) shall be factory assembled by the louver manufacturer. Louver sizes too large for shipping shall be built up by the contractor from factory assembled louver sections to provide overall sizes required. Louver design shall incorporate structural supports required to withstand a wind load of 25 lbs. per sq. ft. (optional 50 lbs. per sq. ft.) (equivalent of a 100 mph wind).

Louvers shall be United Enertech FL-D-4, 6063-T5 aluminum construction as follows:
FRAME: 4.19" deep, .081" nominal wall thickness
BLADES: .081" nominal wall thickness. Blades are positioned at 39° angle and spaced approximately 2.88" center to center.
SCREEN: .75" x .051" (19 x 1.3) expanded, flattened aluminum in removable frame.
FINISH: Select finish specification from United Enertech Finishes brochure.

Published louver performance data bearing the AMCA Certified Ratings seal for Air Performance & Water Penetration must be submitted for approval prior to fabrication and must demonstrate pressure drop and water penetration equal to or less than the United Enertech model specified.

AMCA Standard 500 provides a reasonable basis for testing and rating louvers. Testing to AMCA 500-L is performed under a certain set of laboratory conditions. This does not guarantee that other conditions will not occur in the actual environment where louvers must operate. The louver system should be designed with a reasonable safety factor for louver performance. To ensure protection from water carryover, design with a performance level somewhat below maximum desired pressure drop and .01 oz./sq. ft. of water penetration.

PERFORMANCE DATA



Beginning point of **WATER PENETRATION**
 for **MODEL FL-D-4** lies above
1250 fpm
 free area velocity at .01 oz. of water
 (penetration)



United Enertech Corporation certifies that the louver model shown hereon is licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with the AMCA publication 511 and comply with the requirement of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Performance and Water Penetration ratings.

FL-D-4 FREE AREA CHART (SQUARE FEET)

Louver Height Inches	Louver Width In Inches																			Louver Height Inches
	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	
12	0.32	0.51	0.71	0.91	1.10	1.30	1.50	1.70	1.89	2.09	2.29	2.48	2.68	2.88	3.08	3.27	3.47	3.67	3.86	12
18	0.55	0.90	1.24	1.59	1.93	2.28	2.63	2.97	3.32	3.66	4.01	4.35	4.70	5.04	5.39	5.73	6.08	6.42	6.77	18
24	0.80	1.30	1.80	2.30	2.80	3.30	3.80	4.30	4.80	5.30	5.80	6.30	6.80	7.30	7.80	8.30	8.80	9.30	9.79	24
30	0.99	1.61	2.23	2.84	3.46	4.08	4.70	5.31	5.93	6.55	7.17	7.78	8.40	9.02	9.64	10.25	10.87	11.49	12.11	30
36	1.21	1.97	2.73	3.48	4.24	4.99	5.75	6.51	7.26	8.02	8.78	9.53	10.29	11.05	11.80	12.56	13.31	14.07	14.83	36
42	1.47	2.38	3.30	4.22	5.13	6.05	6.96	7.88	8.79	9.71	10.63	11.54	12.46	13.37	14.29	15.20	16.12	17.04	17.95	42
48	1.69	2.75	3.80	4.86	5.91	6.96	8.02	9.07	10.13	11.18	12.24	13.29	14.35	15.40	16.45	17.51	18.56	19.62	20.67	48
54	1.92	3.12	4.32	5.52	6.72	7.92	9.11	10.31	11.51	12.71	13.91	15.11	16.31	17.51	18.70	19.90	21.10	22.30	23.50	54
60	2.16	3.50	4.85	6.19	7.53	8.88	10.22	11.57	12.91	14.26	15.60	15.94	18.29	19.63	20.98	22.32	23.67	25.01	26.35	60
66	2.39	3.88	5.37	6.86	8.35	9.84	11.33	12.82	14.31	15.80	17.29	18.79	20.28	21.77	23.26	24.75	26.24	27.73	29.22	66
72	2.63	4.26	5.90	7.54	9.18	10.81	12.45	14.09	15.73	17.36	19.00	20.64	22.28	23.91	25.55	27.19	28.83	30.46	32.10	72
78	2.85	4.63	6.40	8.18	9.95	11.73	13.51	15.28	17.06	18.84	20.61	22.39	24.16	25.94	27.72	29.49	31.27	33.05	34.82	78
84	3.11	5.04	6.98	8.91	10.85	12.78	14.72	16.66	18.59	20.53	22.46	24.40	26.34	28.27	30.21	32.14	34.08	36.01	37.95	84
90	3.34	5.42	7.50	9.58	11.66	13.74	15.82	17.90	19.97	22.05	24.13	26.21	28.29	30.37	32.45	34.53	36.61	38.69	40.77	90
96	3.58	5.82	8.05	10.29	12.52	14.76	16.99	19.22	21.46	23.69	25.93	28.16	30.39	32.63	34.86	37.10	39.33	41.57	43.80	96
102	3.76	6.10	8.44	10.78	13.12	15.47	17.81	20.15	22.49	24.83	27.17	29.52	31.86	34.20	36.54	38.88	41.22	43.57	45.91	102
108	4.05	6.58	9.11	11.64	14.16	16.69	19.22	21.75	24.27	26.80	29.33	31.86	34.38	36.91	39.44	41.96	44.49	47.02	49.55	108
114	4.24	6.89	9.53	12.18	14.82	17.47	20.12	22.76	25.41	28.05	30.70	33.34	35.99	38.63	41.28	43.92	46.57	49.21	51.86	114
120	4.48	7.27	10.06	12.85	15.64	18.43	21.22	24.02	26.81	29.60	32.39	35.18	37.97	40.76	43.55	46.34	49.14	51.93	54.72	120

Project: Northside Facial Cosmetic Surgery

Location: Alpharetta, GA

Mech. Cont: Paulson-Cheek Mechanical

Mech. Engineer: AHA Consulting Engineers

Submitted by: Georgia Air Associates



HVAC Submittal Cover Sheet

SECTION: 10 PRODUCT: Exhaust Fans

Paulson-Cheek Mechanical, Inc.
6145 Norhtbelt Parkway, Suite F
Norcross, GA 30071

PHONE: 770-729-0076
FAX: 770-729-1076

PROJECT: **Northside Facial Cosmetic Surgery**

LOCATION: **Alpharetta, GA**

Paulson-Cheek Mechanical, Inc.

ARCHITECT'S/ENGINEER'S STAMP

Paulson-Cheek Mechanical, Inc.

DATE RECEIVED:	03/25/15
MANUFACTURER:	Pennbarry
SUPPLIER:	GAA
SUBMITTED DATE:	03/25/15

☒ NO ERRORS DETECTED

☐ CORRECT EXCEPTIONS NOTED

THIS APPROVAL OF SHOP DRAWINGS DOES
NOT RELIEVE THE SUBCONTRACTOR OR VENDOR
FROM THE REQUIREMENTS OF THE CONTRACT
DOCUMENTS.

CHECKED BY:	Mark Walden
DATE CHECKED:	03/25/15



GEORGIA AIR ASSOCIATES

SUBMITTAL

PRODUCT: INLINE & ROOF EXHAUST FANS PAGE: 1 OF 1
MANUFACTURER: PENNBARRY FILE: _____
SPEC. PARA. NO.: MECH. DWGS. DATE: 3/23/15

PROJECT: NORTHSIDE FACIAL COSMETIC SURGERY ARCH: _____
LOCATION: ALPHARETTA, GA ENGR: AHA CONSULTING ENGINEERS
REMARKS: _____ CUST: PAULSON-CHEEK MECHANICAL

<u>TAG:</u>	<u>QTY:</u>	<u>MODEL:</u>	<u>CFM:</u>	<u>S.P.:</u>	<u>HP:</u>	<u>VOLTAGE:</u>	<u>ACCESSORIES:</u>
CIF-1	1	Z10STDA	300	.25"	234W	115/1/60	LT
EF-1	1	DX14B	1750	1.25"	3/4	208/1/60	ABS,BDD,DS-ITW1,UG12-23.25

ACCESSORIES (CIF-1):

LT = LEKTROL SPEED CONTROLLER.

NOTE: BACKDRAFT DAMPER & DISCONNECT ARE STANDARD ON CIF-1.

ACCESSORIES (EF-1):

ABS = ALUMINUM BIRDSCREEN. (STANDARD)

BDD = BACKDRAFT DAMPER.

DS-ITW1 = FACTORY-WIRED NEMA 1 DISCONNECT SWITCH.

UG12-23.25 = 23.25x23.25 O.D. x 12" HIGH GALVANIZED STEEL INSULATED ROOF CURB**.

** NOTE: ROOF CURB FOR EF-1 IS FOR A FLAT, CONVENTIONAL ROOF. (PLEASE VERIFY)

General Fan Schedule

Job Name: Northside Facial Cosmetic Surgery, LLC
 Job Notes:



Tag /Mark	CIF-1	EF-1			
QTY	1	1			
Product Line	Zephyr Inline	Domex			
Model	Z10STDA	DX14B			
Drive	VarSpd	Belt			
Flow Rate- (CFM)	300	1750			
SP - ("w.g.)	0.25	1.25			
Temperature - (F)	70	70			
Altitude - (ft.)	0	0			
RPM	856	1331			
BHP/Watts	234.00	0.66			
Motor	0.29 HP 115/1/60 Open	0.75 HP 208/1/60 OPEN			
Tip Speed - (ft/min)	1707	5533			
Inlet Vel (ft/min)	310	1549			
Outlet Vel (ft/min)	938	1067			
SE%	0.00	51.79			
ME%	0.00	54.74			
Sones	3.32	12.40			
NC	40	60			
dBA	43	62			
Mounting Position	Ceiling - Inline	Roof			
Application	Exhaust	Exhaust			
Fan Notes					
Ro/Opng - (in)	0.00	16.00			
Dmpr.O.D.(in)	0.00	15.75			
Shipping W. - (lbs)	30	98			
Accessories:					
1	Lek-Trol Electronic Speed Controller	Aluminum Bird Screen			
2	Thermal Overload Protection	Gravity Backdraft Damper			
3		NEMA 1 - Disconnect			
4		NEMA 1 Internal Wiring			
5		UG12 - 12 Inch Flat Curb			
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
Specials:					

Project: Northside Facial Cosmetic Surgery

Location: Alpharetta, GA

Mech. Cont: Paulson-Cheek Mechanical

Mech. Engineer: AHA Consulting Engineers

Submitted by: Georgia Air Associates

**VARSPD DRIVE FORWARD CURVED INLINE
EXHAUST FAN**

PERFORMANCE						
Qty	Model	Volume (CFM)	SP (in. w.c.)	RPM	BHP/Watts	TipSpeed
1	Z10STDA	300	0.25	856	234.00	1,707

MOTOR INFORMATION		
Motor HP	Volt/Ph/Hz	Enclosure
0.29	115/1/60	Open

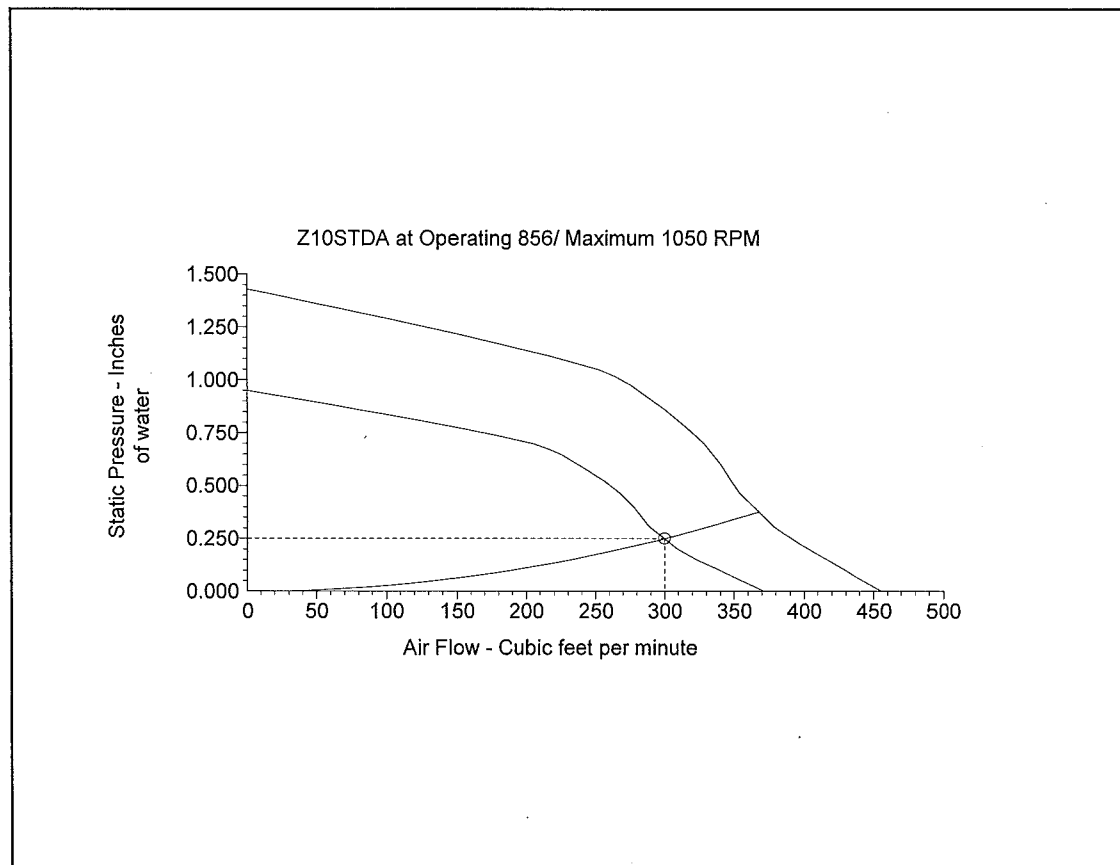
DIMENSIONS		
Damper Size (in.)	Ro\Opng (in.)	Shipping Wgt. (lbs)
0X0	N/A	30



SOUND POWER (dB re 10 ⁻¹²)								NC	Dba	Sones
OCTAVE POWER CENTER FREQUENCY (hz)										
63	125	250	500	1000	2000	4000	8000			
59	62	54	52	48	46	42	34	40	43	3.3

Accessories:

- 1) Lek-Trol Electronic Speed Controller
- 2) Thermal Overload Protection



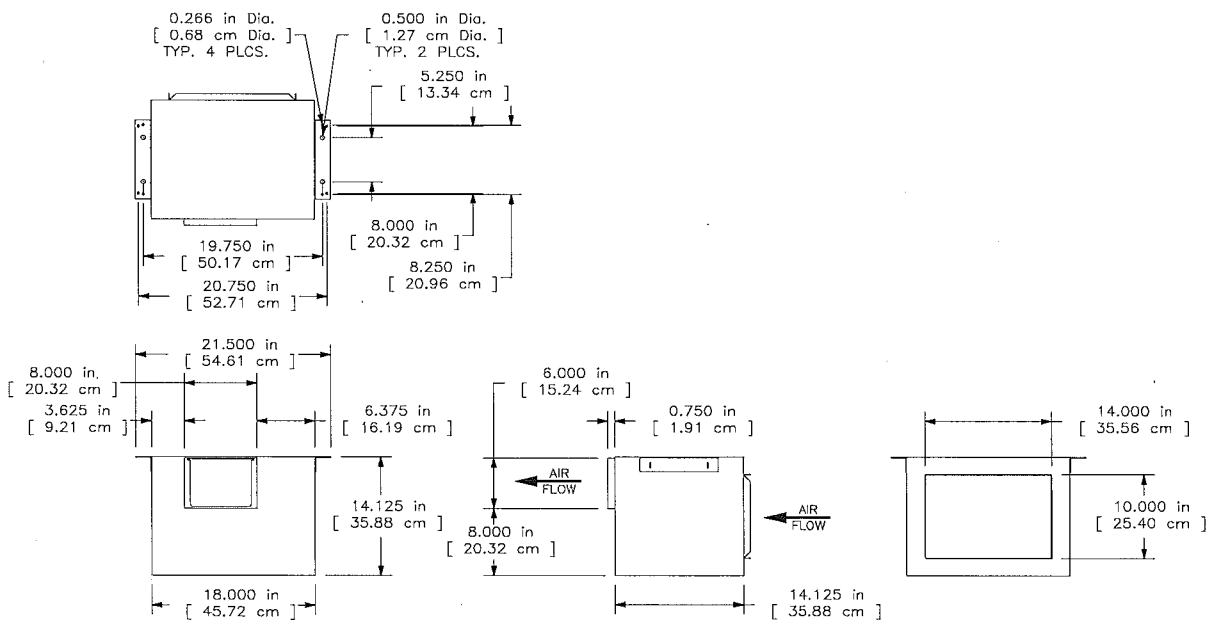
VARSPD DRIVE FORWARD CURVED INLINE

EXHAUST FAN

STANDARD CONSTRUCTION

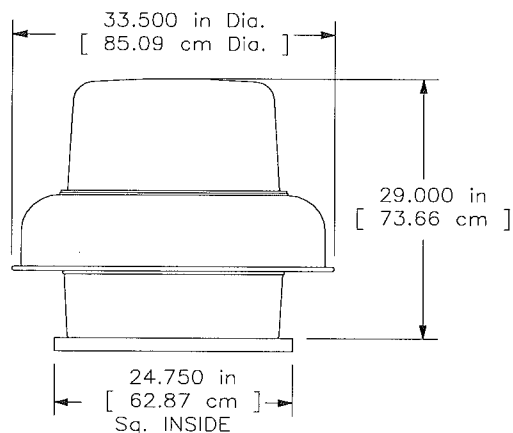
Housing acoustically insulated galvanized * Forward curved centrifugal blower * Integral chatter proof backdraft damper (except Z14/15) * Motor continuous duty, with thermal overload protection, positively cooled, & mounted on vibration isolators * Includes electrical disconnect "plug" (except Z14/15) to pre-wired junction box * Fan/motor/wheel "power pack" is removable * Corrosion resistant fasteners *

Note: All Dimensions shown are in units of inches



BELT DRIVE CENTRIFUGAL ROOF EXHAUST FAN STANDARD CONSTRUCTION

Aluminum housing * Backward inclined centrifugal aluminum wheel * Birdscreen * Aluminum (galvanized optional) pre-punched base with welded corners * Oversized electrical chase * Pre-wired junction box (single speed ODP motors up to 5 HP) * Motors continuous duty, ball bearing design, & mounted out of the airstream * Variable pitch motor pulley * Static resistant belt(s) * Regreaseable pillow block ball bearings * Shafts turned, ground & polished, * Vibration isolators * Corrosion resistant fasteners * High Wind Construction option NOA # 08-1202.13 designed to handle 155 MPH winds



Note: All Dimensions shown are in units of inches

PERFORMANCE

Qty	Model	Volume (CFM)	SP (in. w.c.)	RPM	BHP/Watts	TipSpeed
1	DX14B	1,750	1.25	1,331	0.66	5,533

MOTOR INFORMATION

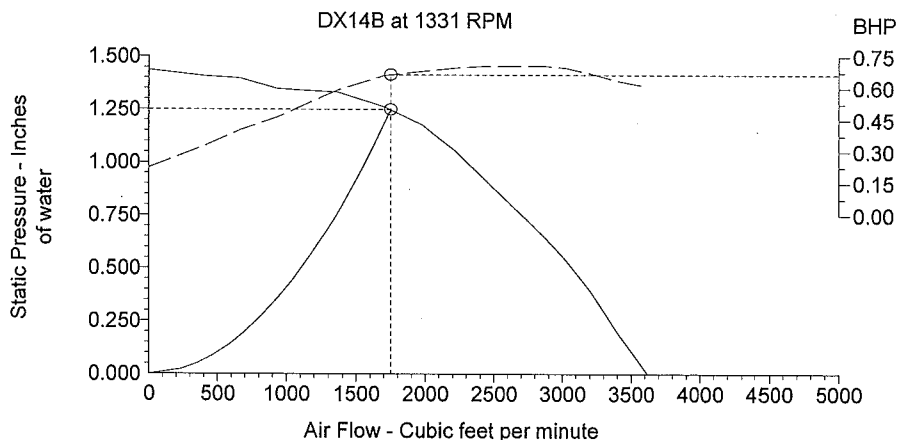
Motor HP	Volt/Ph/Hz	Enclosure
0.75	208/1/60	OPEN

DIMENSIONS

Damper Size (in.)	Ro/Opng (in.)	Shipping Wgt. (lbs)
15.75X15.75	16X16	98

SOUND POWER (dB re 10⁻¹²)

OCTAVE POWER CENTER FREQUENCY (hz)								LwA	Dba	Sones
63	125	250	500	1000	2000	4000	8000			
77	82	76	69	64	63	59	54	60	62	12.4



Accessories:

- 1) Aluminum Bird Screen
- 2) Gravity Backdraft Damper
- 3) NEMA 1 - Disconnect
- 4) NEMA 1 Internal Wiring
- 5) UG12 - 12 Inch Flat Curb



PennBarry
1401 N. Plano Road,
Richardson, TX 75081

Job Name: Northside Facial Cosmetic Surgery, LLC

Tag/Mark: EF-1

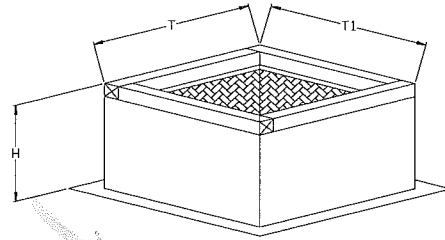
Date: 3/23/2015

UG FLAT

Galvanized - Unibeam - Straight Wall
Roof Curb

Standard Construction Features:

- 18 ga. Galvanized Steel
- all welded construction
- 1.5"/3# density fiberglass insulation
- wood nailer
- fastening flange



STANDARD UG CURB

Dimensions

Tag / Mark	Fan	Height(in)	QTY	Ro(in.)	Ro'(in.)	T(in.)	T'(in.)	H(in.)	Shipping Wt
EF-1	DX14B	12.00	1	16.00	16.00	23.25	23.25	12.00	37.00

Project: Northside Facial Cosmetic Surgery

Location: Alpharetta, GA

Mech. Cont: Paulson-Cheek Mechanical

Mech. Engineer: AHA Consulting Engineers

Submitted by: Georgia Air Associates



HVAC Submittal Cover Sheet

SECTION: 11

PRODUCT: Unit & Wall Heaters

Paulson-Cheek Mechanical, Inc.
6145 Norhtbelt Parkway, Suite F
Norcross, GA 30071

PHONE: 770-729-0076
FAX: 770-729-1076

PROJECT: **Northside Facial Cosmetic Surgery**

LOCATION: **Alpharetta, GA**

Paulson-Cheek Mechanical, Inc.

ARCHITECT'S/ENGINEER'S STAMP

Paulson-Cheek Mechanical, Inc.

DATE RECEIVED:	03/25/15
MANUFACTURER:	Raywall
SUPPLIER:	GAA
SUBMITTED DATE:	03/25/15

☒ NO ERRORS DETECTED

☐ CORRECT EXCEPTIONS NOTED

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NOT RELIEVE THE SUBCONTRACTOR OR VENDOR
FROM THE REQUIREMENTS OF THE CONTRACT
DOCUMENTS.

CHECKED BY:	Mark Walden
DATE CHECKED:	03/25/15



GEORGIA AIR ASSOCIATES

SUBMITTAL

PRODUCT: ELECTRIC UNIT & WALL HEATERS PAGE: 1 OF 1

MANUFACTURER: RAYWALL FILE: _____

SPEC. PARA. NO.: MECH. DWGS. DATE: 3/23/15

PROJECT: NORTHSIDE FACIAL COSMETIC SURGERY ARCH: _____

LOCATION: ALPHARETTA, GA ENGR: AHA CONSULTING ENGINEERS

REMARKS: _____ CUST: PAULSON-CHEEK MECHANICAL

<u>TAG:</u>	<u>QTY:</u>	<u>MODEL:</u>	<u>WATTS:</u>	<u>VOLTAGE:</u>	<u>ACCESSORIES:</u>
UH-1,2,3,4	4	F1F5103N	3300	208/1	T5100, A5105
UH-5	1	F1F5105N	5000	208/1	T5100, A5105
WH-1,2	2	F3220T2RPW	2000	208/1	Std. Accessories

ACCESSORIES (UH-1,2,3,4,5 UNIT HEATERS):

T5100 = INTERNAL THERMOSTAT.

A5105 = CEILING/WALL BRACKET.

ACCESSORIES (WH-1,2 WALL HEATERS):

STANDARD ACCESSORIES INCLUDE BUILT-IN DOUBLE-POLE (POSITIVE OFF) THERMOSTAT, MANUAL RESET THERMAL LIMIT SWITCH & RECESSED MOUNTING FRAME.

NOTES:

- 1) DISCONNECT SWITCHES FOR UH-1,2,3,4,5 UNIT HEATERS ARE TO BE PROVIDED BY OTHERS.

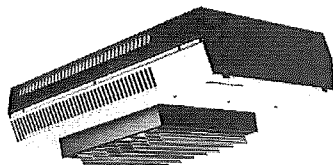
5100 Series Horizontal or Vertical Mounted Fan Forced Unit Heater

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3.3 KW THROUGH 50 KW SUSPENDED FAN FORCED UNIT HEATERS AVAILABLE IN 1 OR 3 PHASE FOR ALL STANDARD VOLTAGES FROM 208V TO 480V THAT CAN BE MOUNTED TO PROVIDE HORIZONTAL OR VERTICAL DISCHARGE.



Horizontal Discharge



Vertical Discharge

FEATURES:

- Made in U.S.A.

FIELD INSTALLED OPTIONS:

- In-unit ~~or wall~~ mounted temperature control thermostats low or line voltage.
- ~~Summer fan switch to operate the fan only.~~
- ~~Power disconnect switch.~~
- ~~Heat stratification thermostat.~~

CONSTRUCTION:

Heavy 18 gauge welded steel cabinet with powder coated finish and control compartment housing a master terminal board with a hinged and latched access door, simplifying wiring, installation & maintenance.

HEATING ELEMENT:

Copper clad steel sheath element with continuously brazed steel fins formed to allow side draw through air flow.

OVERHEAT PROTECTION:

All units come equipped with automatic reset type limit controls to de-energize the heater should an over-temperature situation occur.

FAN and MOTOR:

Totally enclosed, 1-speed, 1-phase, permanently lubricated, thermally protected motors with unit bearings on 3 KW - 20 KW models. Totally enclosed, 2-speed, 1-phase, permanently lubricated, thermally protected motors with sleeve bearings on 25 KW - 50 KW models. All motors mounted with rubber insulators to minimize vibration & noise. Fan over-ride purges unit of residual heat at shutdown.

LOUVER ASSEMBLY:

Louvers are individually adjustable for directional control of air flow up to 15° from straight horizontal. Optional diffusers available for down flow (vertical discharge) applications.

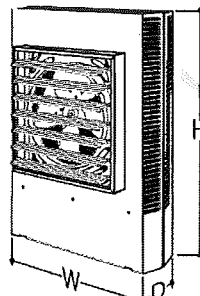
TEMPERATURE CONTROLS:

Optional low voltage and line voltage thermostats available with an adjustable temperature range of 40°F to 90°F. Units with model numbers ending in CA1 are factory wired for low voltage controls. 25 KW through 50 KW units are designed for two stage heating operation.

INSTALLATION:

Unit Heaters can be mounted for horizontal or vertical discharge. Applications up to 6000 Ft. See UH Series above 6000 Ft.

Taskmaster Dimensions



KW RATING	DIMENSIONS (inches)		
	H	W	D
3.3 - 5.0	17 3/4	14 15/32	6 1/2
7.5 - 10.0	24 5/16	21 1/2	6 1/2
15.0 - 20.0	28 11/16	21 1/2	6 1/2
25.0 - 50.0	34	29 1/4	10 1/16



Installing the Taskmaster Series

DETERMINING HEATER REQUIREMENTS

Calculate the heating loads using the NEMA handbook or ASHRAE guide. Then determine the quantity and size of unit heaters to be used. To maintain uniform heat and reduce stratified air, it is recommended that the total CFM of the units turn the air over approximately 3 times per hour. In instances where a large group of people are located and normally in the same area, use a large number of lower KW unit heaters. In warehouse areas or storage rooms where heat distribution and constant temperatures are less important, use fewer heaters of higher capacity.

HORIZONTAL MOUNT

Small rooms can be heated by one unit heater. Where two walls are exposed, heaters should be mounted as shown in Figure A. In larger rooms, units should be located so their air streams wipe exposed walls without blowing at them. Units should be located so that the air stream of one supports that of another thus setting up a circulatory air movement shown in Figure B. (Distance between units to be approximately 1-1/2 times published air throw.) Units should not be mounted horizontally in areas having ceiling heights in excess of 15-18 ft.

VERTICAL MOUNT

Units should be mounted vertically in high bay areas, or where heater location would not interfere with plant operation or traffic. Heaters should be situated to provide free air circulation. Size and selection of units should be based on recommended mounting height. Optional diffusers may best be employed to reduce high air velocity and at the same time disperse heated air in a uniform pattern. When unit heaters are used to combat cold air inrush from opened loading dock doors, one or more units should be arranged to blow warm air across opening (Figure C).

DUAL MOUNTING

Where square footage is large and comfort essential, both horizontal and vertical installations may best serve your requirements as Figure D demonstrates.

Note: Products in this section with factory installed controls are subject to 100% cancellation/restocking charges.



Figure A

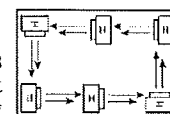


Figure B

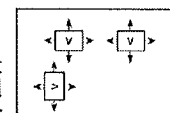


Figure C

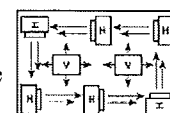


Figure D

5100 Series Horizontal or Vertical Mounted Fan Forced Unit Heater

Standard Taskmaster Models & Series Notes

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UPC# 686334	MODEL	KW	BTU/H	VOLTS	PH	AMPS	CONTROL VOLTAGE	TEMP RISE	AIR THROW	CFM	RECOMMENDED MOUNTING HT.		WT. (LBS)
											Horizontal	Vertical	
645089	F1F5103N	3.3	11.2	208	1	15.9 / 9.17	208						
645102	HF1B5103N	3.3/2.5	11.2 / 8.5	240/208	1	13.7 / 11.9	240 / 208						
645683	F2F5103N	3.3	11.2	208	1/3	15.9 / 9.17	208						
645706	HF2B5103N	3.3/2.5	11.2 / 8.5	240/208	1/3	13.7 / 11.9	240 / 208	26°F	12'	400	9'	9'	25
645720	G1G5103N			277	1	11.9	277						
645126	P3P5103CA1N	3.3	11.2	480	3	4.0	24						
645546	F1F5105N	5.0	17.1	208	1	24.1	208						
645560	HF1B5105N	5.0/3.7	17.1 / 12.8	240/208	1	20.8 / 18.1	240 / 208						
645140	F3F5105N	5.0	17.1	208	1/3	24.1	208	40°F	12'	400	9'	9'	25
645164	HF2B5105N	5.0	17.1	240	1/3	20.8 / 18.1	240						
		3.7	12.8	208	1/3	12.1 / 10.4	208						
645843	G1G5105N	5.0	17.1	277	1	18.1	277						
645188	P3P5105CA1N	5.0	17.1	480	3	6.1	24						
645201	F2F5107CA1L	7.5	25.6	208	1/3	36.1 / 20.8							
		7.5	25.6	240	1/3	27.1 / 31.3							
645225	HF2B5107CA1L	5.6	19.2	208	1/3	31.3 / 27.1		34°F	22'	700	10'	12'	54
645928	G1G5107CA1L	7.5	25.6	277	1	27.1							
645249	P3P5107CA1N	7.5	25.6	480	3	9.1							
645263	F2F5110CA1L	9.9	33.8	208	1/3	47.8 / 27.4							
		10.0	34.1	240	1/3	41.2 / 24.0							
645287	HF2B5110CA1L	7.5	25.6	208	1/3	36.1 / 20.8		45°F	22'	700	10'	14'	55
645645	G1G5110CA1N	10.0	34.1	277	1	36.1							
645300	P3P5110CA1N	10.0	34.1	480	3	12.1							
645324	F3F5115CA1L	15.0	51.2	208	3	41.7							
645348	HF3B5115CA1L	15.0/11.2	51.2 / 38.4	240/208	3	36.1 / 31.3		43°F	32'	1100	11'	20'	64
645362	P3P5115CA1N	15.0	51.2	480	3	18.1							
645386	HF3B5120CA1L	19.7/14.8	67.2 / 50.5	240/208	3	47.8 / 41.1		57°F	32'	1100	12'	18'	65
645409	P3P5120CA1N	20.0	68.3	480	3	24.1							
645881	F3F5125CA1L	25.0	85.3	208	3	69.5		40/44°F	45'	2000/1800	12'	22'	120
645942	HF3B5125CA1L	25.0/18.7	85.3 / 64.0	240/208	3	60.2 / 52.1							
645980	P3P5125CA1N	25.0	85.3	480	3	30.1							
645423	F3F5130CA1L	30.0	102.4	208	3	83.4							
645447	HF3B5130CA1L	30.0/22.5	102.4 / 76.8	240/208	3	72.3 / 62.5		47/53°F	40'	2000/1800	12'	20'	120
645461	P3P5130CA1N	30.0	102.4	480	3	36.2							
644044	F3F5140CA1L	40.0	136.5	208	3	111.2							
644068	HF3B5140CA1L	40.0/30.0	136.5 / 102.4	240/208	3	96.4 / 83.4		40/45°F	55'	3100/2800	15'	24'	120
644082	P3P5140CA1N	39.0	133.1	480	3	47.0							
645485	F3F5150CA1L	49.6	169.3	208	3	139.0							
645508	HF3B5150CA1L	50.0/37.5	170.6 / 128.0	240/208	3	120.5 / 104.3		51/56°F	50'	3100/2800	15'	22'	120
645522	P3P5150CA1N	50.0	170.6	480	3	60.3							

International Models

UPC# 686334	MODEL	KW	BTU/H	VOLTS	PH	AMPS	CONTROL VOLTAGE	TEMP RISE	AIR THROW	CFM	RECOMMENDED MOUNTING HT.		WT. (LBS)
											Horizontal	Vertical	
715300	Q3H5103CA1	3.3	11263	380		5.02		26					25
724920	R3H5103CA1			415		4.6			12'	400	9'	9'	
724937	Q3H5105CA1			380		7.6		40					27
424944	R3H5105CA1	5.0	17065	415		6.96							
717137	Q3H5107CA1			380		11.4							
724951	R3H5107CA1	7.5	25600	415		10.5		34	22'	700	10'	12'	54
686570	Q3H5110CA1			380		15.2							
724968	R3H5110CA1	10.0	34130	415		13.9		45			10'	14'	55
724975	Q3H5115CA1			380		22.8							
724982	R3H5115CA1	15.0	51195	415		20.9		43	32'	1100	11'	20'	64
704175	Q3H5120CA1			380		30.4							
724999	R3H5120CA1	20.0	68260	415		27.85		57			12'	18'	65
719193	Q3H5125CA1			380		38.0							
710619	R3H5125CA1	25.0	85325	415		34.8		40/44	45'	2000/1800	12'	22'	
725002	Q3H5130CA1			380		45.6							
710626	R3H5130CA1	30.0	102390	415		41.8		47/53	40'		12'	20'	120
725019	Q3H5140CA1			380		60.85							
709835	R3H5140CA1	40.0	136520	415		55.7		40/45	55'	3100/2800	15'	24'	

• For 24V control add "CA1" suffix. • For 120V control add "CA2" suffix. • For other voltages consult factory.

NOTES:

- 25-50KW models are wired for single or two stage heating and have two speed motors.
- Air delivery and motor data on dual voltage units reflect higher voltage.
- 600 Volt models available in 5 KW through 30 KW. Contact factory for delivery.
- Supply wire on 40 and 50 KW models should have rated insulation of 75°C minimum.
- Use T5122 for two stage control.
- Use T5123 for two stage control.
- Use TFS5102 for two stage control.
- Wall thermostat must be used when built-in stratification thermostat is required.

5100 Series Horizontal or Vertical Mounted Fan Forced Unit Heater

Recommended Control Options, Control Accessory Options, & Control Accessories

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MODEL NUMBER	DISCONNECT SWITCH		THERMOSTAT		SUMMER FAN SWITCH		THERMOSTAT & SUMMER FAN SWITCH WALL MOUNTED	STRATIFICATION THERMOSTAT	
	1 Ø	3 Ø	IN-BUILT	WALL MOUNTED	IN-BUILT	WALL MOUNTED		IN-BUILT	WALL MOUNTED
F1F5103N	DCS 202	NA	T5100	ET5SS					
HF1B5103N	DCS 202	NA	T5100	ET 5SS	FS5101	FSW5111	NA	TC5103	TC1602
F2F5103N	DCS 202	NA	T5100	ET 5SS					
HF2B5103N	DCS 202	NA	T5100	ET 5SS					
G1G5103N	DCS 202	NA		ET5SS				NA	
P3P5103CA1N	DCS 403	NA		A6176	FS5102	FSW5112	TFSS5101	TC5102	NA
F1F5105N	DCS 403	NA	T5100	S2025					
HF1B5105N	DCS 403	NA	T5100	ET5SS					
F2F5105N	DCS 403	NA	T5100	ET5SS	FS5101	FSW5111	NA	TC5103	TC1602
HF2B5105N	DCS 403	NA	T5100	ET5SS					
G1G5105N	DCS 202	NA		S2025				NA	
P3P5105CA1N	DCS 403	NA			FS5102	FSW5112		TC5102	NA
F2F5107CA1L	DCS 403	NA							
HF2B5107CA1L	DCS 403	NA			FS5101	FSW5111		TC5103	TC1602
G1G5107CA1L	DCS 403	NA						NA	
P3P5107CA1L	DCS 403	NA			FS5102	FSW5112		TC5102	NA
F2F5110CA1L	DCS 603	NA							
HF2B5110CA1L	DCS 603	NA			FS5101	FSW5111	TFSS5101	TC5103	TC1602
G1G5110CA1N	DCS 403	NA						NA	
P3P5110CA1N	DCS 403	NA			FS5102	FSW5112			NA
F3F5115CA1L	DCS 603	NA			FS5101	FSW5111			TC1602
HF3B5115CA1L	DCS 403	NA							
P3P5115CA1L	DCS 403	NA			FS5102	FSW5112			NA
HF3B5120CA1L	DCS 603	NA			FS5101	FSW5111			TC1602
P3P5120CA1N	DCS 403	NA			FS5102	FSW5112			NA
F3F5125CA1L	DCS 1003	NA			FS5101	FSW5111			TC1602
HF3B5125CA1L	DCS 403	NA			FS5102	FSW5112			NA
P3P5125CA1N	DCS 1003	NA			FS5101	FSW5111			TC1602
F3F5130CA1L	DCS 1003	NA			FS5101	FSW5111			NA
HF3B5130CA1L	DCS 403	NA			FS5102	FSW5112			TC1602
P3P5130CA1N	DCS 403	NA			FS5101	FSW5111			NA
F3F5140CA1L	DCS 403	NA			FS5101	FSW5111			TC1602
HF3B5140CA1L	DCS 603	NA			FS5102	FSW5112			NA
P3P5140CA1N	DCS 603	NA			FS5101	FSW5111			TC1602
F3F5150CA1L	DCS 1003	NA			FS5102	FSW5112			NA
HF3B5150CA1L	DCS 1003	NA			FS5101	FSW5111			TC1602
P3P5150CA1N	DCS 1003	NA			FS5102	FSW5112			NA

CONTROL ACCESSORY OPTIONS - FIELD INSTALLED IN HEATER		
UPC#	MODEL	DESCRIPTION
POWER DISCONNECT SWITCH		
717151	DCS202/5100	2 POLE; 20 AMP; 120-277 V.A.C.
717168	DCS403/5100	3 POLE; 40 AMP; 120-600 V.A.C.
717175	DCS603/5100	3 POLE; 60 AMP; 120-600 V.A.C.
717182	DCS1003/5100	3 POLE; 100 AMP; 120-600 V.A.C.
LINE VOLTAGE THERMOSTAT (45 - 90 °F)		
692779	T5100	SPST; LINE DUTY 25 AMP 120-277V
692780	T5102	DPST; LINE DUTY 25 AMP 120-277V
LOW VOLTAGE THERMOSTAT (ALL CA1 MODELS) (45 - 90 °F)		
692779	T5100	SPST; LOW VOLT/PILOT DUTY; 125VA; (3-20 KW UNITS)
692793	T5122	2-STAGE; LOW VOLT; 125VA; (25-50 KW UNITS)
STRATIFICATION THERMOSTAT		
692809	TC5102	SPST; LOW VOLT/PILOT DUTY (W/RELAY); 70-130°
692816	TC5103	SPST; LINE DUTY 120-240V; 70-130°
SUMMER FAN SWITCH		
692823	FS5101	SPST; LINE VOLT; 120-277V
692830	FS5102	SPST; LINE VOLT; 480-600V

CONTROL ACCESSORIES - REMOTE WALL MOUNTED		
UPC#	MODEL	DESCRIPTION
LINE VOLTAGE THERMOSTAT		
691086	**TW1510	SPST; 25 AMP 120-277V 50-90°
691093	*TW1512	DPST; 25 AMP 120-277V 50-90°
LOW VOLTAGE THERMOSTAT (ALL CA1 MODELS)		
260008	A6176	SPST; (13 - 20 KW UNITS) 50-90°
691116	TW123	2-STAGE; (25 - 50 KW UNITS) 40-90°
STRATIFICATION THERMOSTAT		
691109	TC1602	LINE VOLT 120-277V 70-140°
SUMMER FAN SWITCH		
692625	FSW5111	SPST; LINE VOLT 120-277V
692632	FSW5112	SPST; LOW VOLT (W/RELAY)
LOW VOLTAGE TSTAT & SUMMER FAN SWITCH (W/RELAY) (CA1 MODELS)		
692649	TFSS5101	SPST; LOW VOLT 50-90°
692502	TFSS5102	2 STAGE; LOW VOLT 50-90°

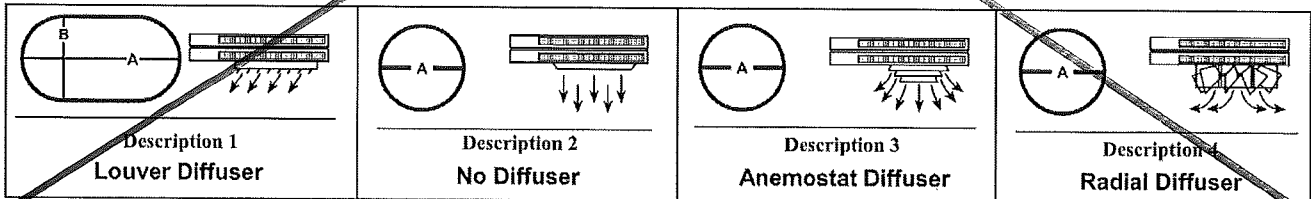
**Any SPST thermostat of sufficient amperage may be substituted.
*Use DPST thermostat for 3-phase line voltage control in non "C" models.

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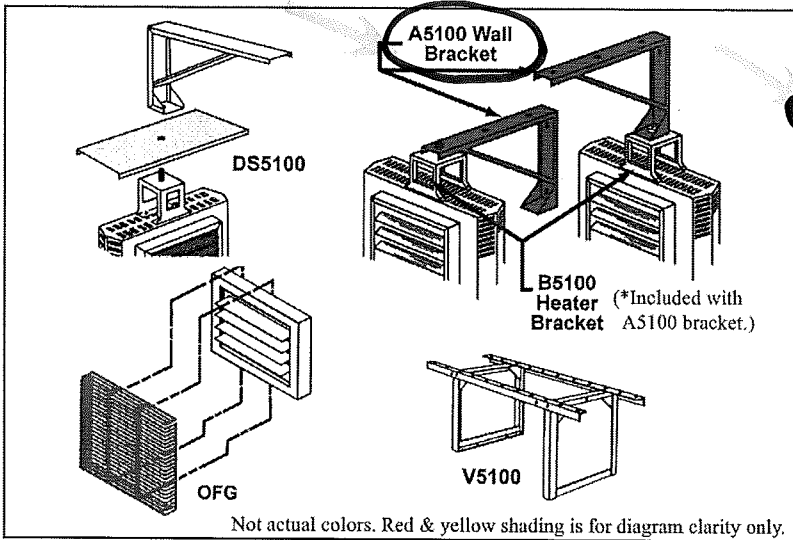
5100 Series Horizontal or Vertical Mounted Fan Forced Unit Heater

Diffuser Options

DESCRIPTION	UPC# 686334	MODEL NUMBER	KW USED	MAX MOUNTING HEIGHT (ft.)	DIMENSION A (feet)	DIMENSION B (feet)	WT. (LBS)
1 Louver Diffuser (Standard). Louvers can be individually adjusted for rectangular coverage over doorways as an air curtain, or to meet rectangular floor pattern heating requirements.	NA	Standard	3.3-5 7.5-10 25-30 40-50	9 12 18 22 24	20 40 52 75 84	10 22 30 42 47	NA
2 General Distribution (No Diffuser). The 5100 air chute venturi permits general down flow air pattern distribution as required at a higher mounting height.	NA	Not Required	3.3-5 7.5-10 25-30 40-50	9 12 18 22 24	15 30 40 55 64	NA	NA
3 Anemostat Diffuser (Optional). For applications where draft restriction is required at lower unit mounting heights.	692687 681186 681186 722070	AD5120 AD5150 AD5150 AD5175	7.5-10 25-30 40-50 60-70	15 17 20 31	38 50 60 -	NA	10 12 37
4 Radial Diffuser (Optional). Individually adjustable fins permit increased floor coverage at 45° open. Additional throw is accomplished when fins are 90° vertical. (Please allow for higher mounting heights)	692663 692663 692670 692670 722087	RD5120 RD5120 RD5150 RD5150 RD5175	7.5-20 25-50 60-70	45° 90° 10 14 14 21 20 30 18 28 26 36	45° 90° 36 30 42 35 62 44 68 54 72 60	NA	12 14 39



Mounting Brackets & Model Designator



MOUNTING BRACKETS			
UPC# 686334	MODEL	MODEL SIZE	WT. (LBS)
692694	A5105	3.3 KW TO 5.0 KW	9
692700	A5120	7.5 KW TO 20.0 KW	13
692717	A5150	25.0 KW TO 50.0 KW	16
688628	B5105*	3.3 KW TO 20.0 KW	3
688635	B5150*	25.0 KW TO 50.0 KW	8
692847	V5105	3.3 KW TO 5.0 KW	9
692854	V5120	7.5 KW TO 20.0 KW	13
692861	V5150	25.0 KW TO 50.0 KW	16
DUST SHIELD			
692878	DS5105	3.3 KW TO 5.0 KW	3
692885	DS5120	7.5 KW TO 20.0 KW	4
681223	DS5150	25.0 KW TO 50.0 KW	5
FAN GUARD			
706544	OFG5101	3.3 KW TO 5.0 KW	3
706551	OFG5102	7.5 KW TO 20.0 KW	4
706568	OFG5103	25.0 KW TO 50.0 KW	5

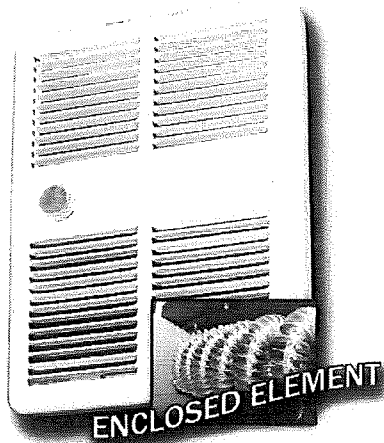
HOW TO DESIGNATE A MODEL:

HF	2	B	51	10	C	A	1
Element Volts F = 208 H = 240 HF = 240/208 G = 277 P = 480	Phase 1 = 1-Phase 2 = 1 or 3-Ph. 3 = 3-Phase	Motor Voltage F = 208 H = 240 B = 240 / 208 G = 277 P = 480	Model Series 51	Element KW	Control System Blank = None C = Contactor	Transformer Blank = None A = Included	Control Volts 1 = 24 2 = 120 (with CA option)

Project: Northside Facial Cosmetic Surgery
 Location: Alpharetta, GA
 Mech. Cont: Paulson-Cheek Mechanical
 Mech. Engineer: AHA Consulting Engineers
 Submitted by: Georgia Air Associates

3200 Series Midsized Fan Forced Wall Heater - With Wall Box

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SHOWN WITH BUILT-IN THERMOSTAT

Features

- Units have white powder coat finish.
- Approved for horizontal mounting - right or left discharge.
- Drywall depth embossments on back can.
- Powder coated 18 gauge steel front.
- Manual reset thermal limit.
- Finned tubular steel element.
- Weight 6 lbs.
- Propeller style fan blade: 2200 RPM / 70 CFM.
- Optional field installed In-Built thermostat.
- Rough in dimensions: 9-1/4" Wide, 12-1/8" High, 3-5/8" Deep.
- Grill dimensions: 9-25/32" Wide, 13" High.
- Made in U.S.A. "TWO WIRE INSTALLATION"



Standard Models

UPC# 686334	MODEL	VOLTS	WATTS	MAX BTU'S	AMPS
BUILT-IN DOUBLE POLE (POSITIVE OFF) THERMOSTAT 50° - 90° F RANGE					
383462	F3220T2RPW	208	2000	6826	9.6
383479	HF3275T2RPW	240	750	2560	3.1
383486	HF3210T2RPW	240/208	1000 / 750	3413 / 2560	4.2 / 3.6
383493	HF3215T2RPW		1500 / 1125	5120 / 3840	6.3 / 5.4
383509	HF3220T2RPW		2000 / 1500	6826 / 5120	8.3 / 7.2
383516	HF3222T2RPW		2250 / 1688	7680 / 5762	9.4 / 8.1
International Models - BUILT-IN DOUBLE POLE (POSITIVE OFF) THERMOSTAT 50° - 90° F RANGE					
396387	M3210T2RPWi	220	840	2867	3.8
396394	M3215T2RPWi		1260	4300	5.7
396400	M3220T2RPWi		1680	5734	7.6
396417	M3222T2RPWi		1890	6451	8.6
Standard Models - BUILT-IN SINGLE POLE (POSITIVE OFF) THERMOSTAT 50° - 90° F RANGE					
383523	E3275TRPW	120	750	2560	6.25
383530	E3210TRPW		1000	3413	8.33
383547	E3215TRPW		1500	5120	12.5
NO BUILT-IN THERMOSTAT					
383554	E3275RPW	120	750	2560	6.25
383561	E3210RPW		1000	3413	8.33
383578	E3215RPW		1500	5120	12.5
383585	F3220RPW	208	2000	6826	9.6
383592	HF3275RPW	240	750	2560	3.1
383608	HF3210RPW	240/208	1000 / 750	3413 / 2560	4.2 / 3.6
383615	HF3215RPW		1500 / 1125	5120 / 3840	6.3 / 5.4
383622	HF3220RPW		2000 / 1500	6826 / 5120	8.3 / 7.2
383639	HF3222RPW		2250 / 1688	7680 / 5762	9.4 / 8.1

Accessories

FIELD INSTALLED COMPONENTS		
UPC# 686334	MODEL	DESCRIPTION
383646	32T1	Single Pole thermostat with positive off for 120V units 50° - 90° F
383653	32T2	Double Pole thermostat with positive off for 240/208V units 50° - 90° F

SURFACE MOUNTED EXTENDERS & FRAMES		
WHITE		
UPC# 686334	MODEL	DESCRIPTION
996976	303EX8RW	1" EXTENDER
996969	303EX16RW	2" EXTENDER
996952	303EX32RW	4" SURFACE MOUNT FRAME